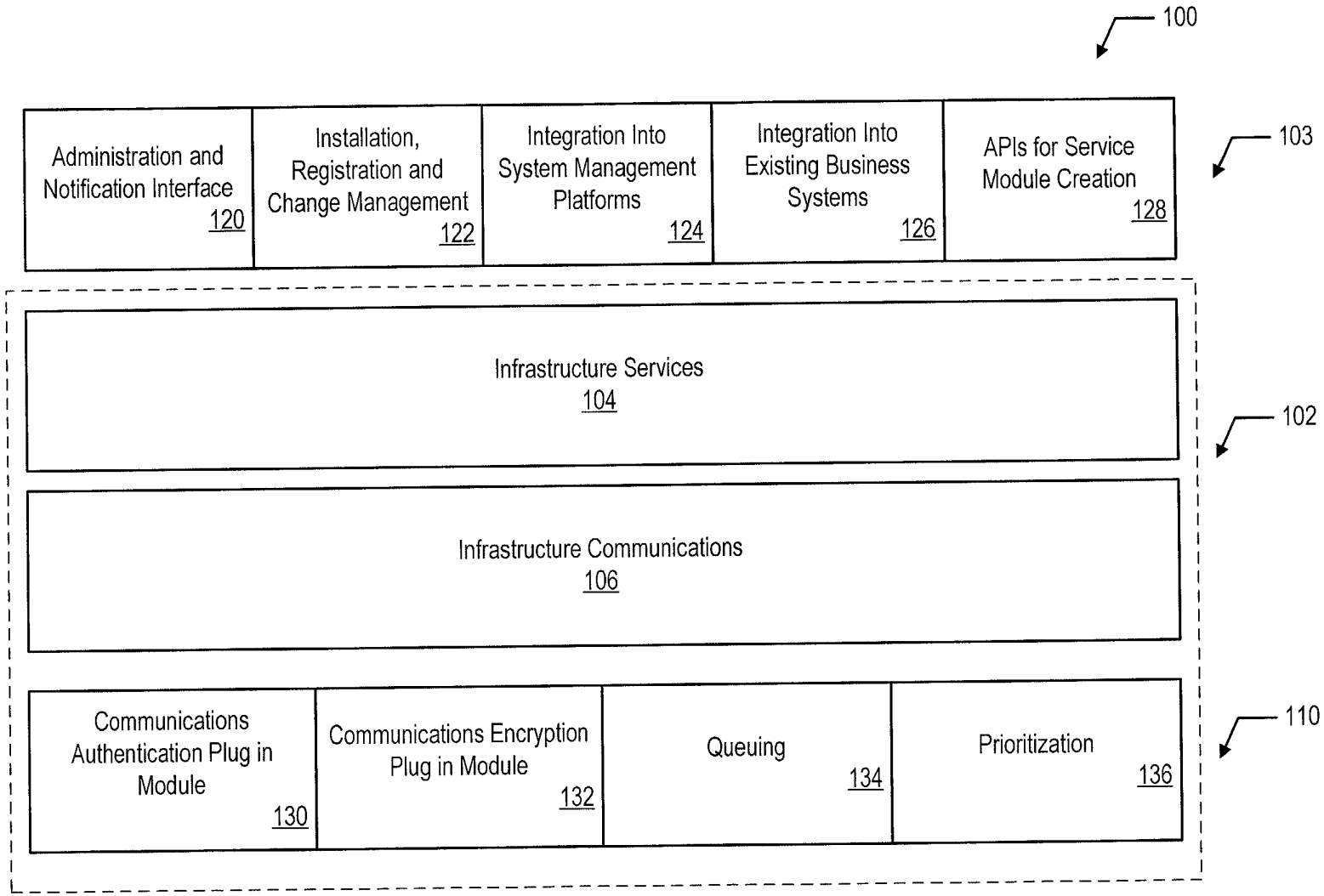

100
Administration and Notification Interface 120
Installation, Registration and Change Management 122
Integration Into System Management Platforms 124
Integration Into Existing Business Systems 126
APIs for Service Module Creation 128
103
Infrastructure Services 104
102
Infrastructure Communications 106
Communications Authentication Plug in Module 130
Communications Encryption Plug in Module 132
Queuing 134
Prioritization 136
110

FIG. 1

20040220 8239901

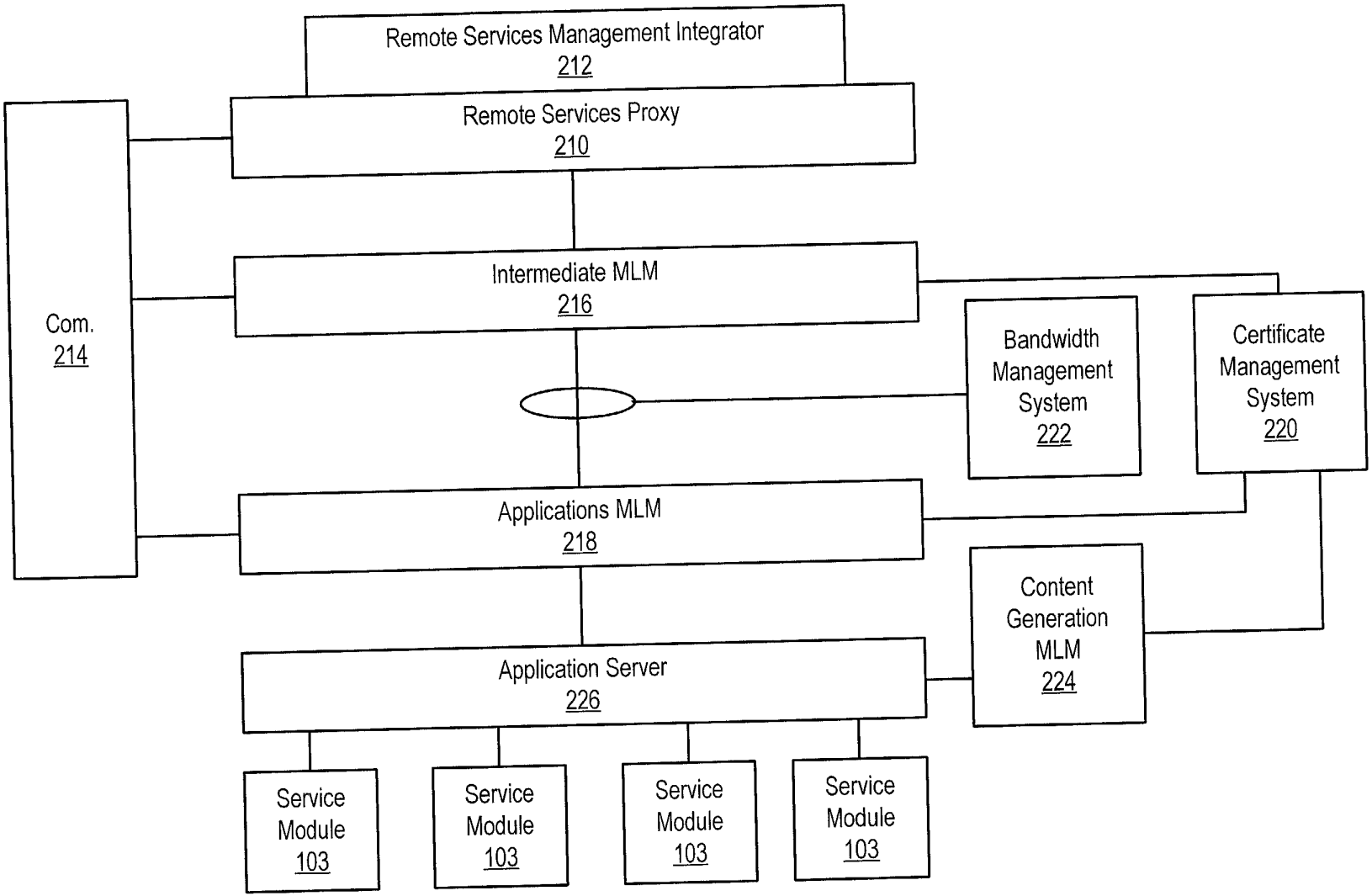


FIG. 2

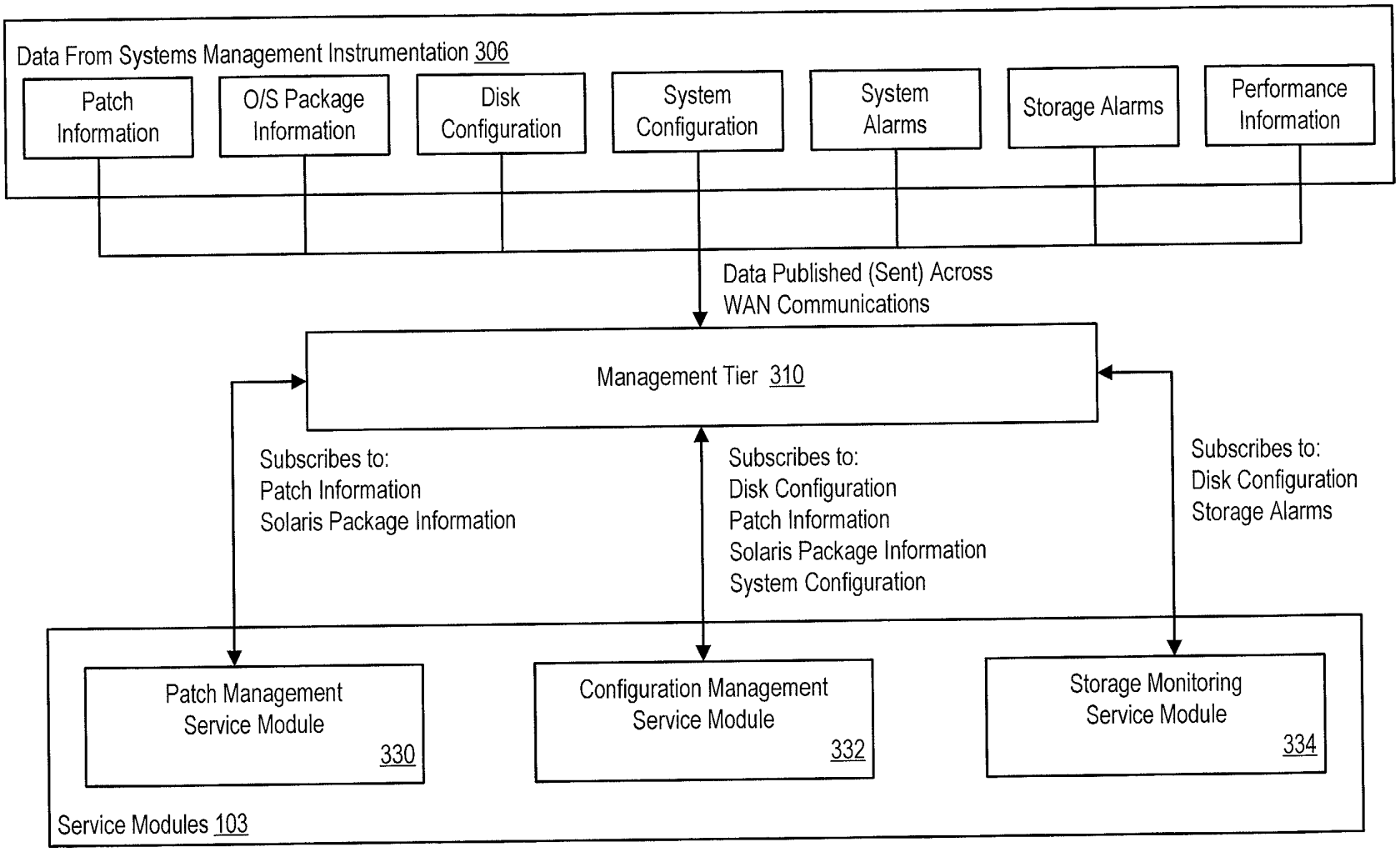

Data From Systems Management Instrumentation 306
Patch Information
O/S Package Information
Disk Configuration
System Configuration
System Alarms
Storage Alarms
Performance Information
Data Published (Sent) Across WAN Communications
Management Tier 310
Subscribes to:
Patch Information
Solaris Package Information
Subscribes to:
Disk Configuration
Patch Information
Solaris Package Information
System Configuration
Subscribes to:
Disk Configuration
Storage Alarms
Patch Management Service Module
330
Configuration Management Service Module
332
Storage Monitoring Service Module
334
Service Modules 103

FIG. 3

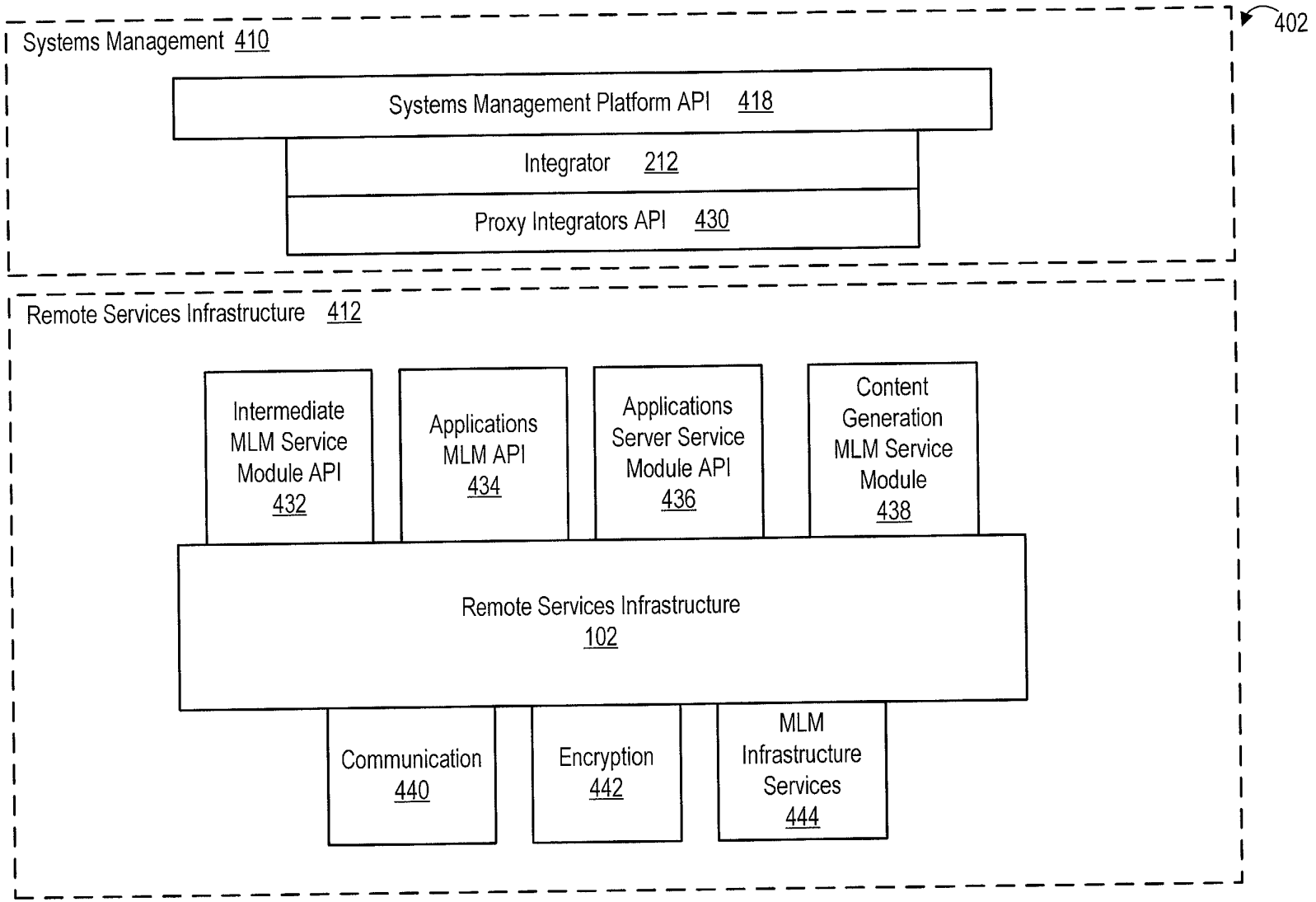

402
Systems Management 410
Systems Management Platform API 418
Integrator 212
Proxy Integrators API 430
Remote Services Infrastructure 412
Intermediate MLM Service Module API 432
Applications MLM API 434
Applications Server Service Module API 436
Content Generation MLM Service Module 438
Remote Services Infrastructure 102
Communication 440
Encryption 442
MLM Infrastructure Services 444

FIG. 4

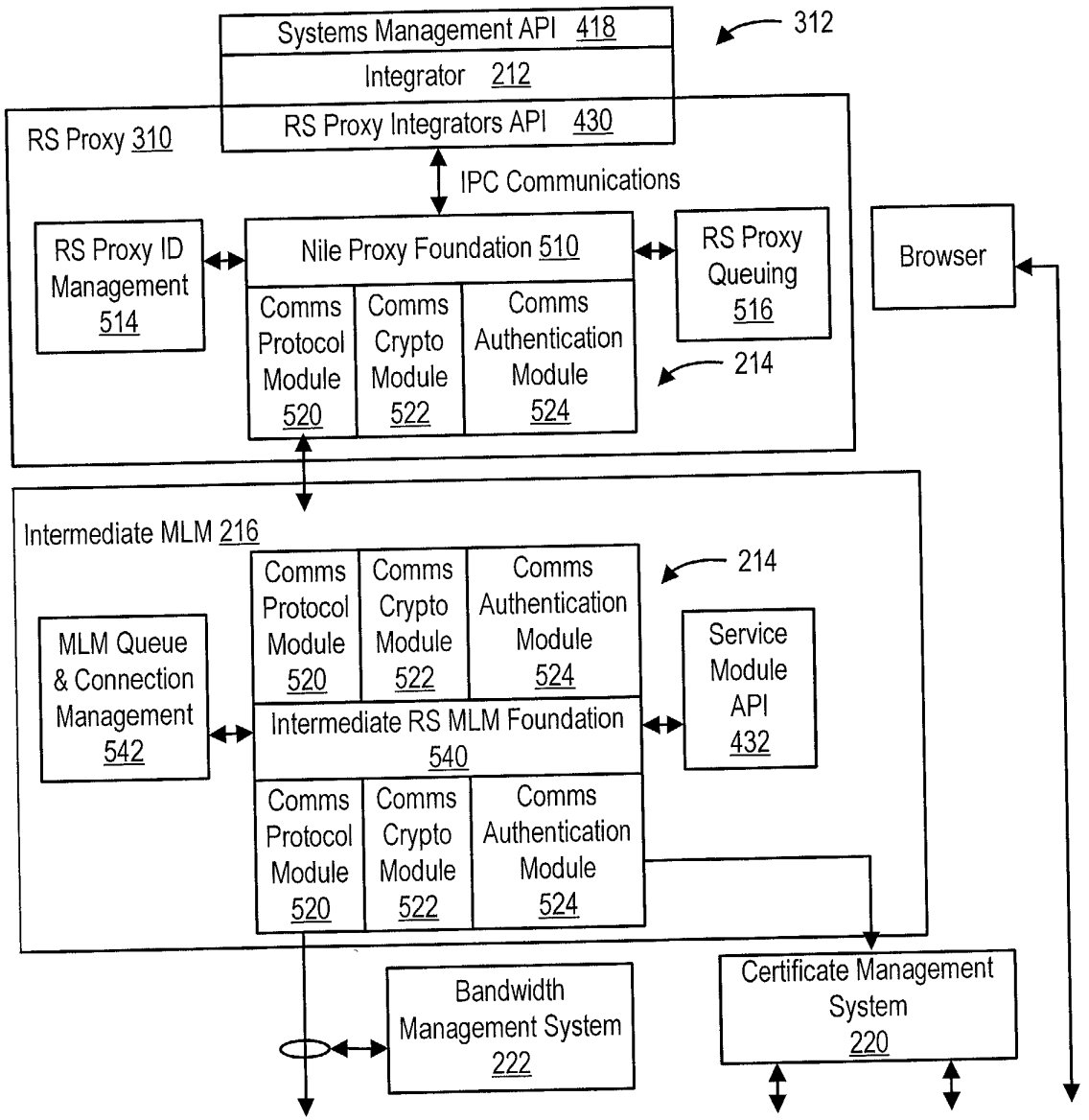


FIG. 5A

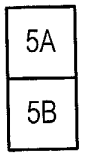


Figure 5 Legend

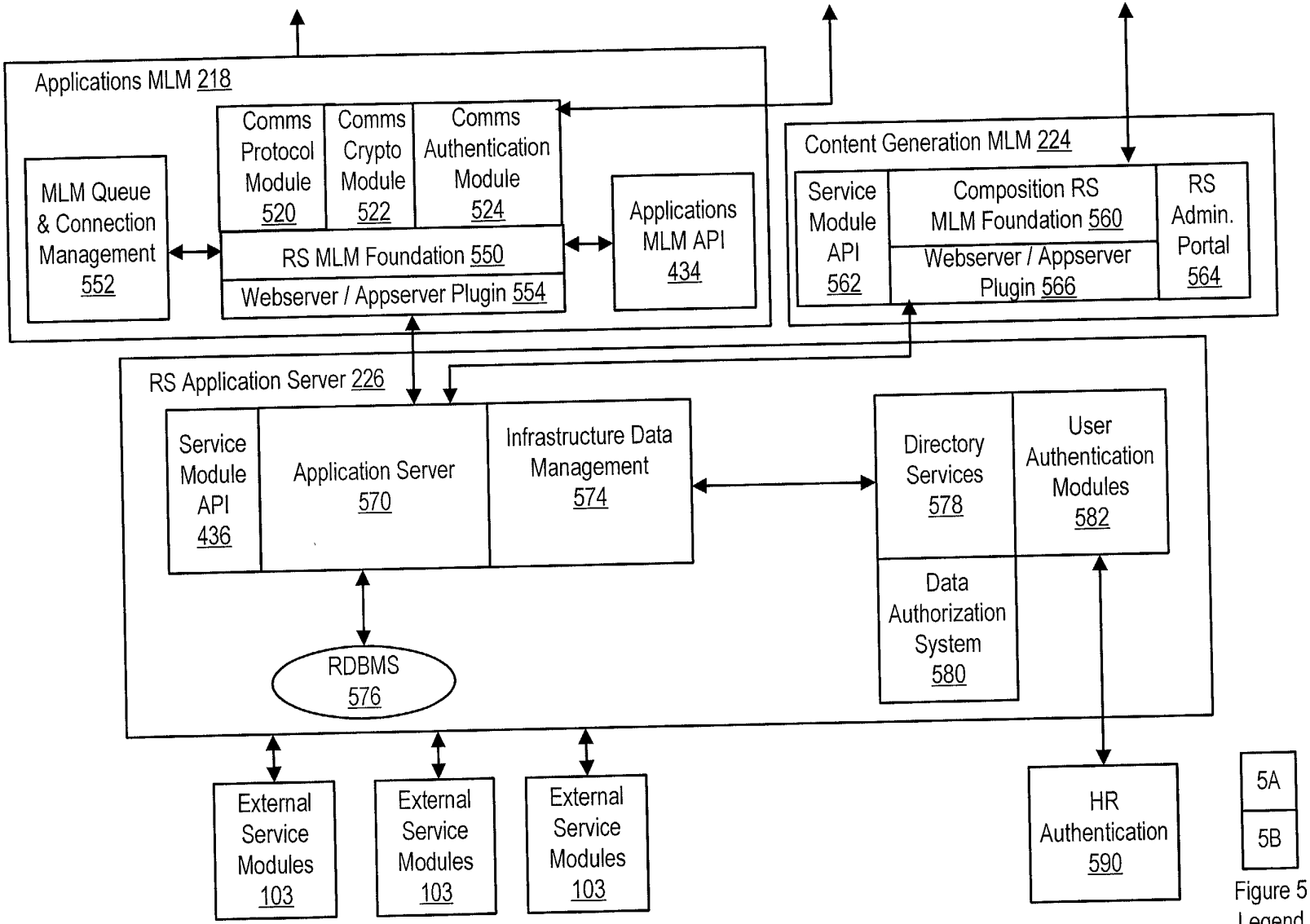

Applications MLM 218
Comms Protocol Module 520
Comms Crypto Module 522
Comms Authentication Module 524
MLM Queue & Connection Management 552
RS MLM Foundation 550
Webserver / Appserver Plugin 554
Applications MLM API 434
Content Generation MLM 224
Service Module API 562
Composition RS MLM Foundation 560
Webserver / Appserver Plugin 566
RS Admin. Portal 564
RS Application Server 226
Service Module API 436
Application Server 570
Infrastructure Data Management 574
Directory Services 578
User Authentication Modules 582
Data Authorization System 580
RDBMS 576
External Service Modules 103
External Service Modules 103
External Service Modules 103
HR Authentication 590
5A
5B
Figure 5 Legend

FIG. 5B

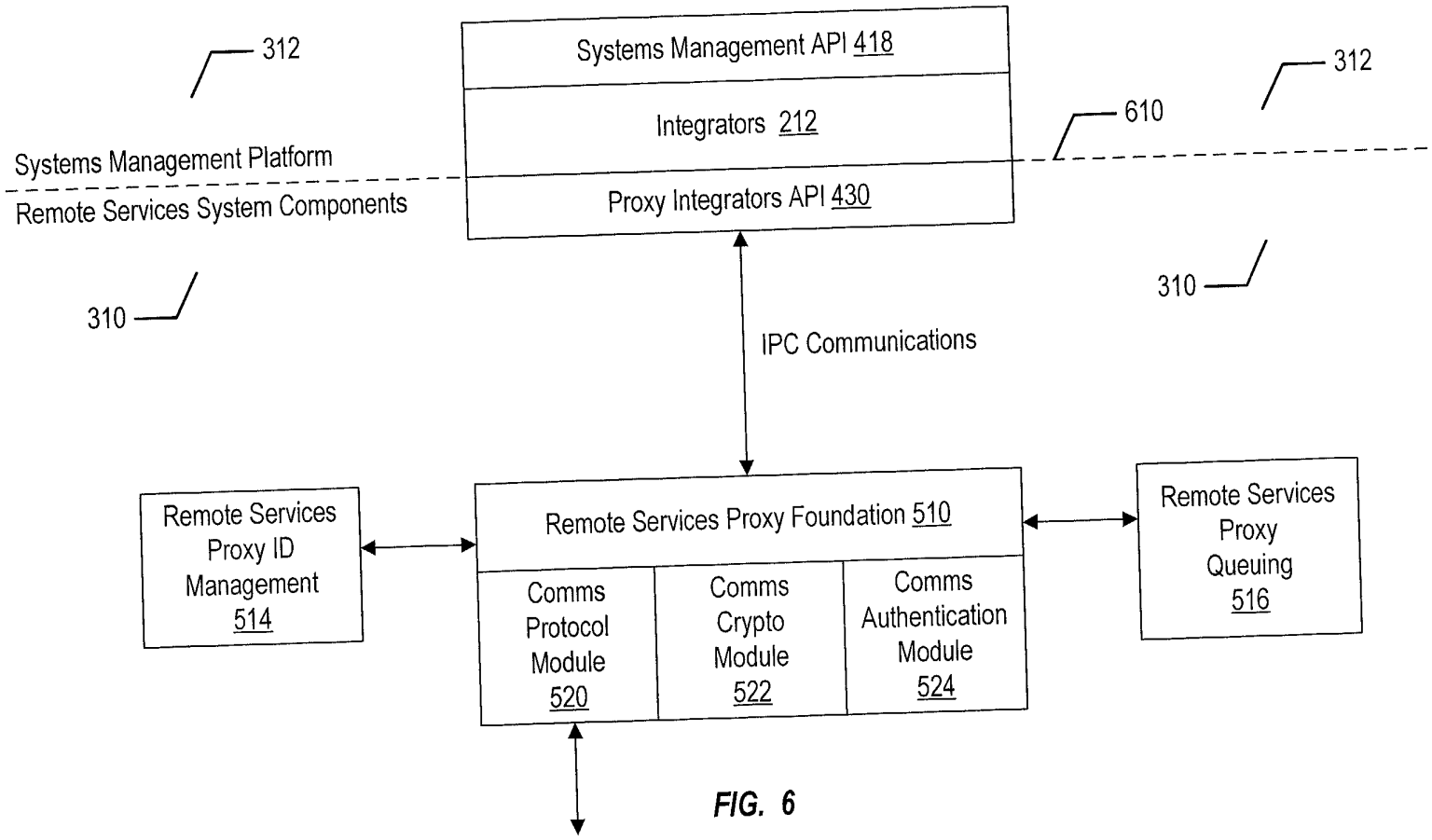

312
Systems Management API 418
Integrators 212
Proxy Integrators API 430
312
610
Systems Management Platform
Remote Services System Components
310
310
IPC Communications
Remote Services Proxy ID Management 514
Remote Services Proxy Foundation 510
Comms Protocol Module 520
Comms Crypto Module 522
Comms Authentication Module 524
Remote Services Proxy Queuing 516

FIG. 6

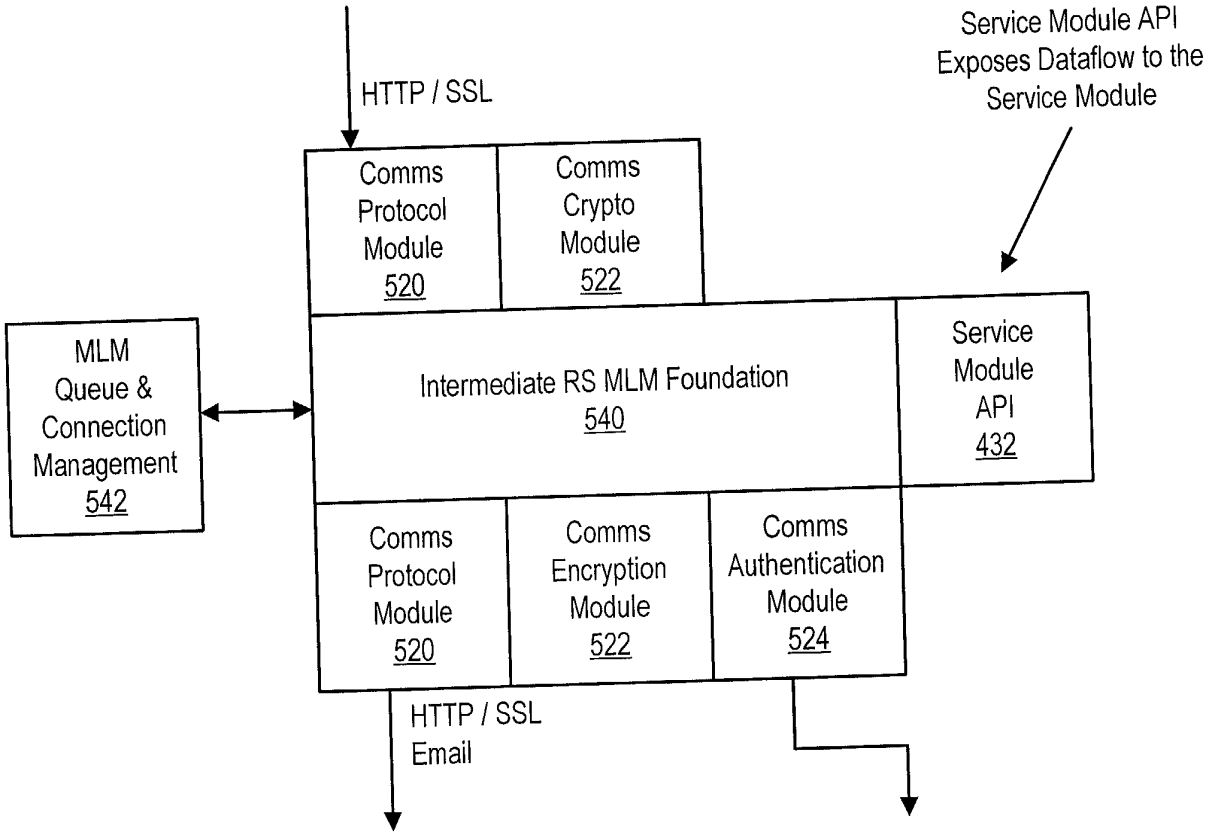

HTTP / SSL
Service Module API
Exposes Dataflow to the
Service Module
Comms
Protocol
Module
520
Comms
Crypto
Module
522
MLM
Queue &
Connection
Management
542
Intermediate RS MLM Foundation
540
Service
Module
API
432
Comms
Protocol
Module
520
Comms
Encryption
Module
522
Comms
Authentication
Module
524
HTTP / SSL
Email

FIG. 7

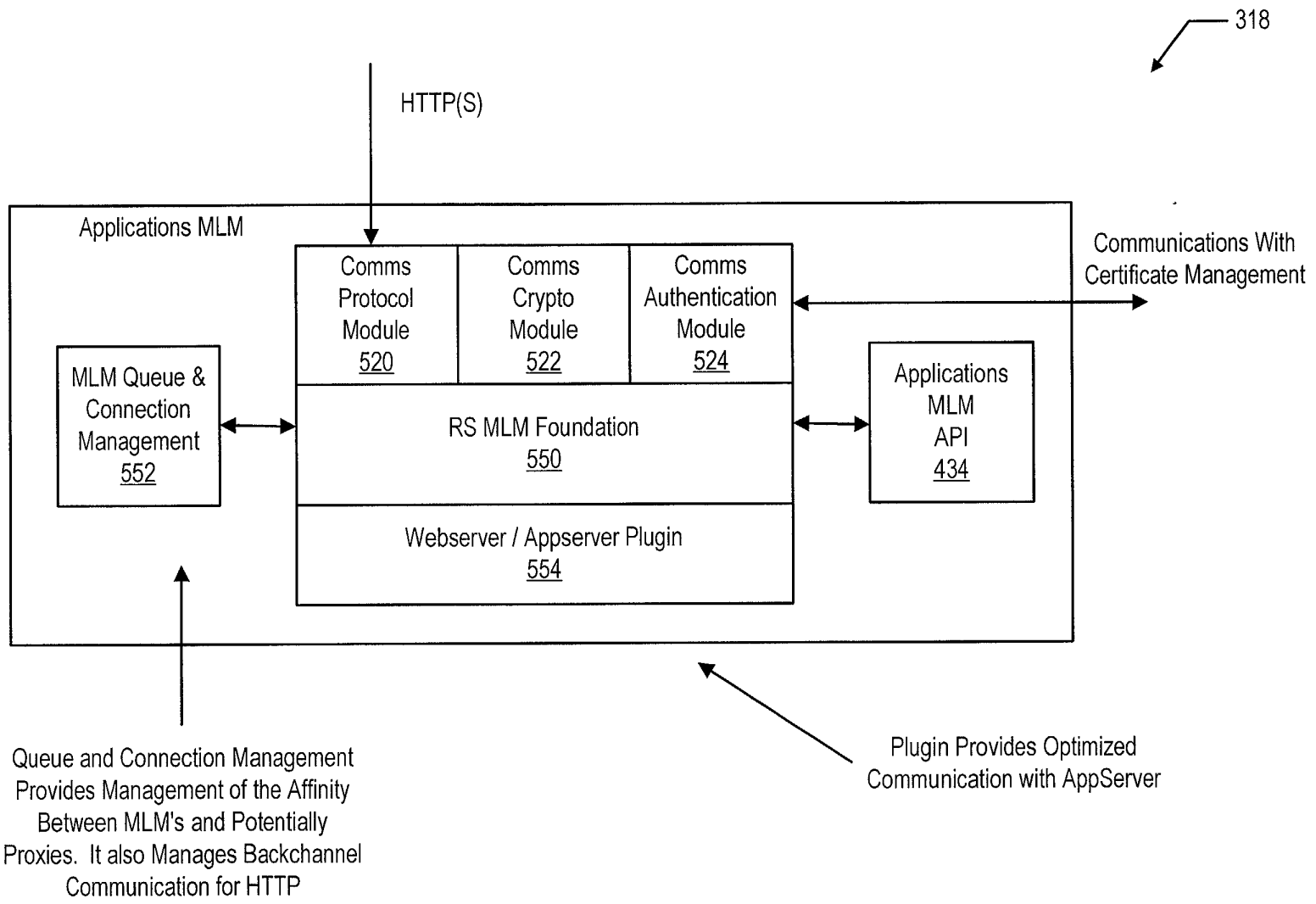

318
HTTP(S)
Applications MLM
Comms Protocol Module 520
Comms Crypto Module 522
Comms Authentication Module 524
Communications With Certificate Management
MLM Queue & Connection Management 552
RS MLM Foundation 550
Applications MLM API 434
Webserver / Appserver Plugin 554
Queue and Connection Management Provides Management of the Affinity Between MLM's and Potentially Proxies. It also Manages Backchannel Communication for HTTP
Plugin Provides Optimized Communication with AppServer

FIG. 8

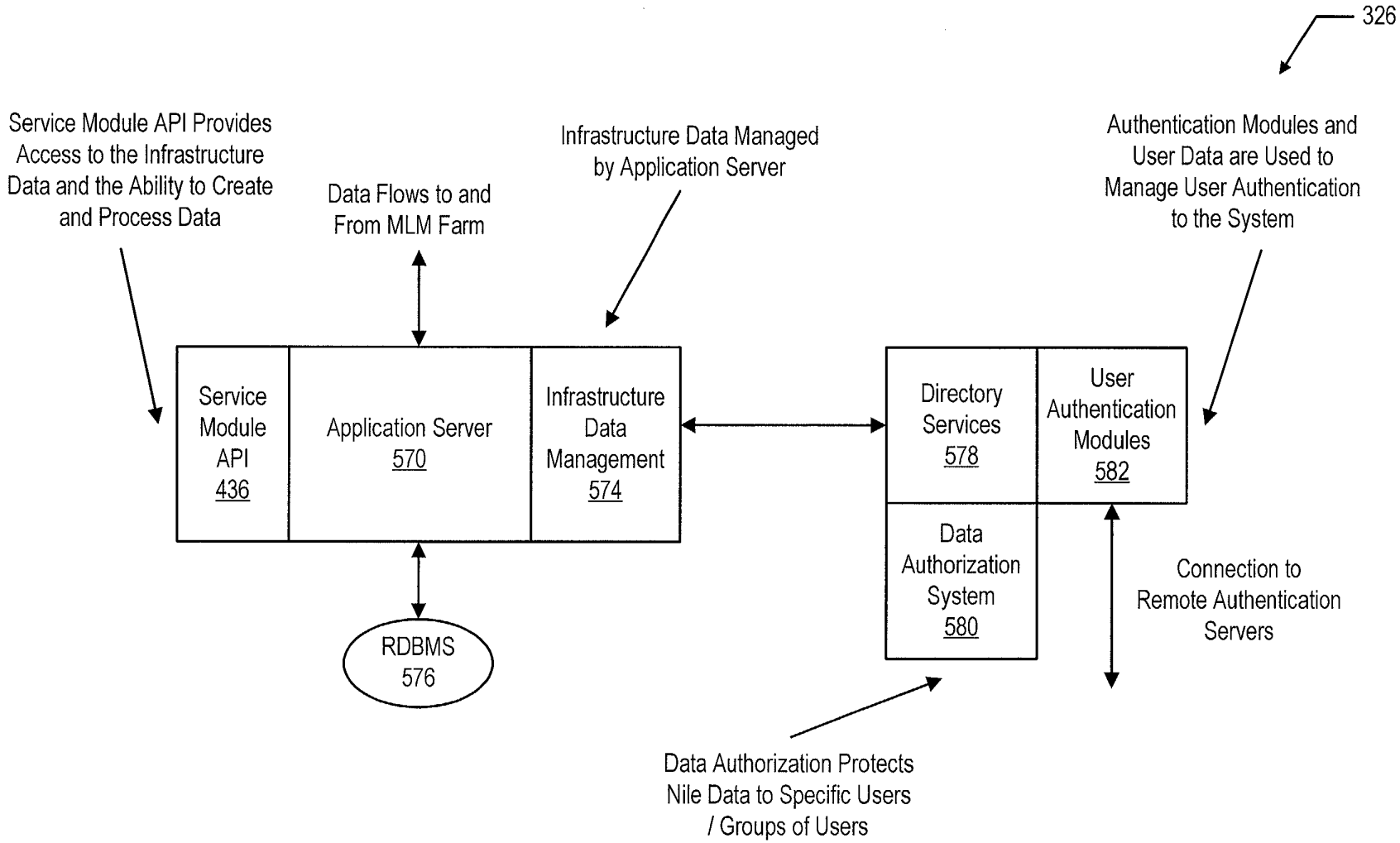

326
Service Module API Provides Access to the Infrastructure Data and the Ability to Create and Process Data
Data Flows to and From MLM Farm
Infrastructure Data Managed by Application Server
Authentication Modules and User Data are Used to Manage User Authentication to the System
Service Module API 436
Application Server 570
Infrastructure Data Management 574
Directory Services 578
User Authentication Modules 582
Data Authorization System 580
RDBMS 576
Connection to Remote Authentication Servers
Data Authorization Protects Nile Data to Specific Users / Groups of Users

FIG. 9

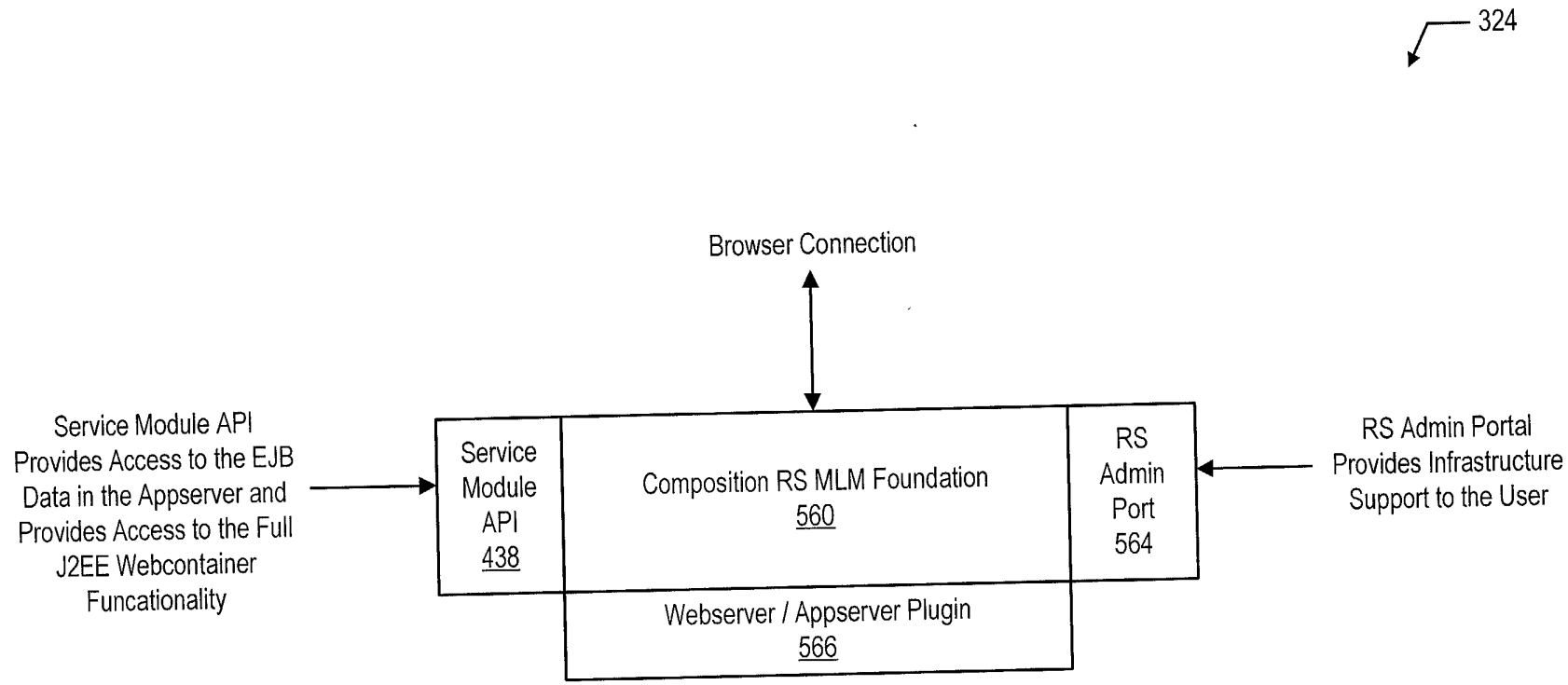

324
Browser Connection
Service Module API
Provides Access to the EJB
Data in the Appserver and
Provides Access to the Full
J2EE Webcontainer
Funcationality
Service
Module
API
438
Composition RS MLM Foundation
560
RS
Admin
Port
564
RS Admin Portal
Provides Infrastructure
Support to the User
Webserver / Appserver Plugin
566

FIG. 10

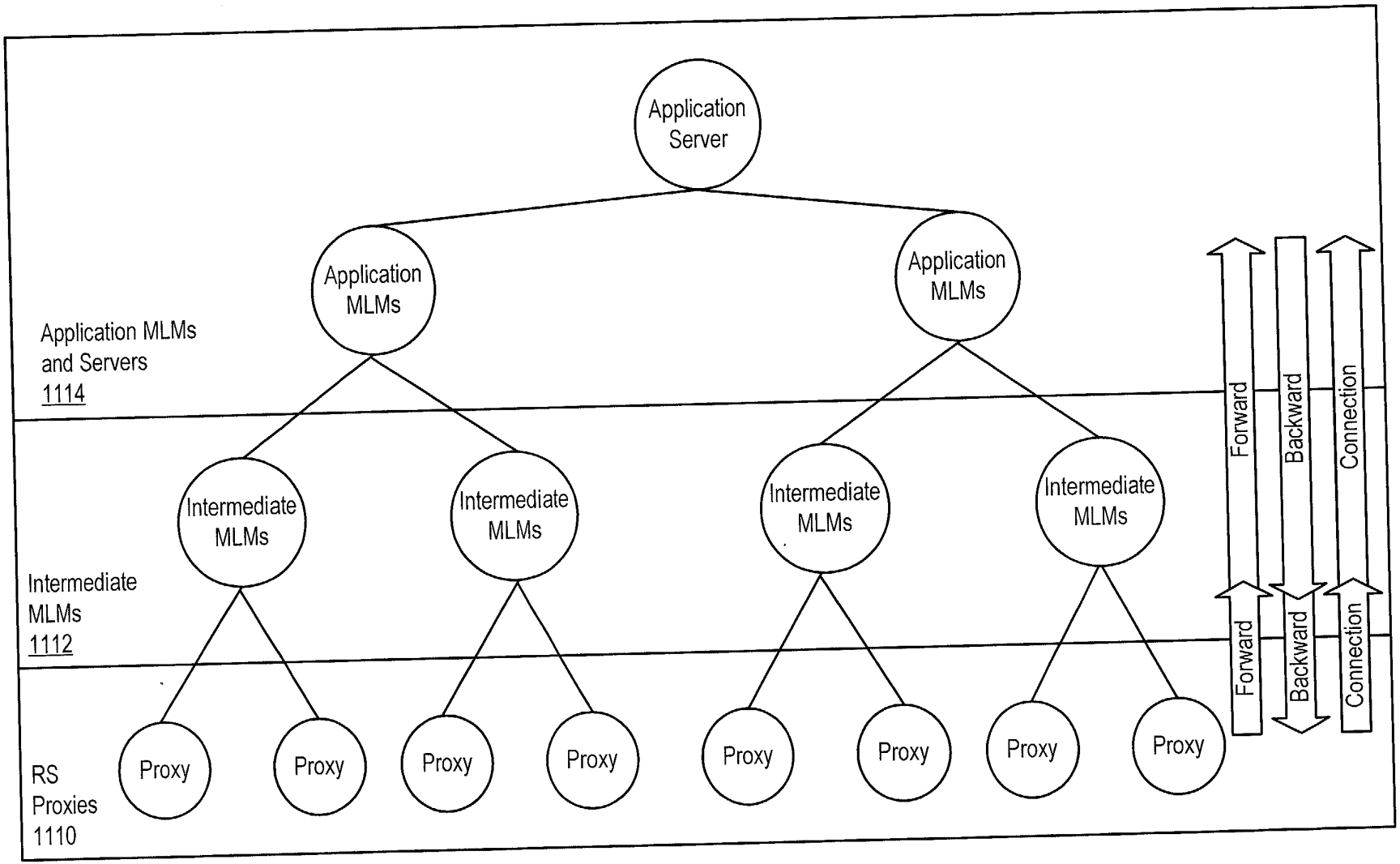

Application Server
Application MLMs
Application MLMs
Application MLMs and Servers 1114
Intermediate MLMs
Intermediate MLMs
Intermediate MLMs
Intermediate MLMs
Intermediate MLMs 1112
Proxy
Proxy
Proxy
Proxy
Proxy
Proxy
Proxy
Proxy
RS Proxies 1110
Forward
Backward
Connection
Forward
Backward
Connection

FIG. 11

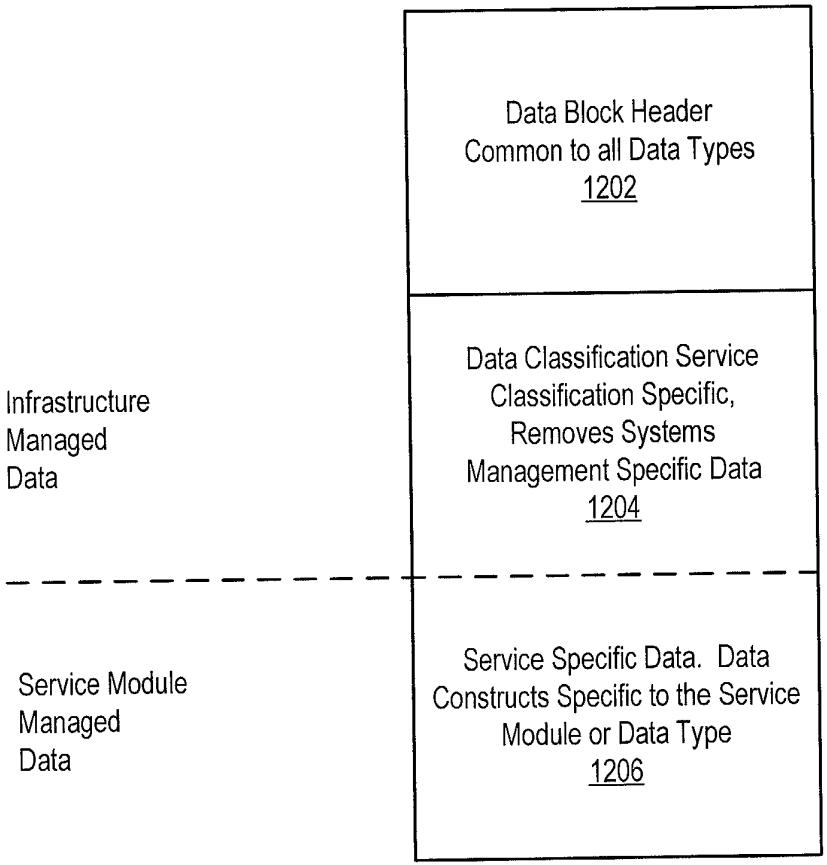

Data Block Header
Common to all Data Types
1202
Data Classification Service
Classification Specific,
Removes Systems
Management Specific Data
1204
Service Specific Data. Data
Constructs Specific to the Service
Module or Data Type
1206
Infrastructure
Managed
Data
Service Module
Managed
Data

FIG. 12

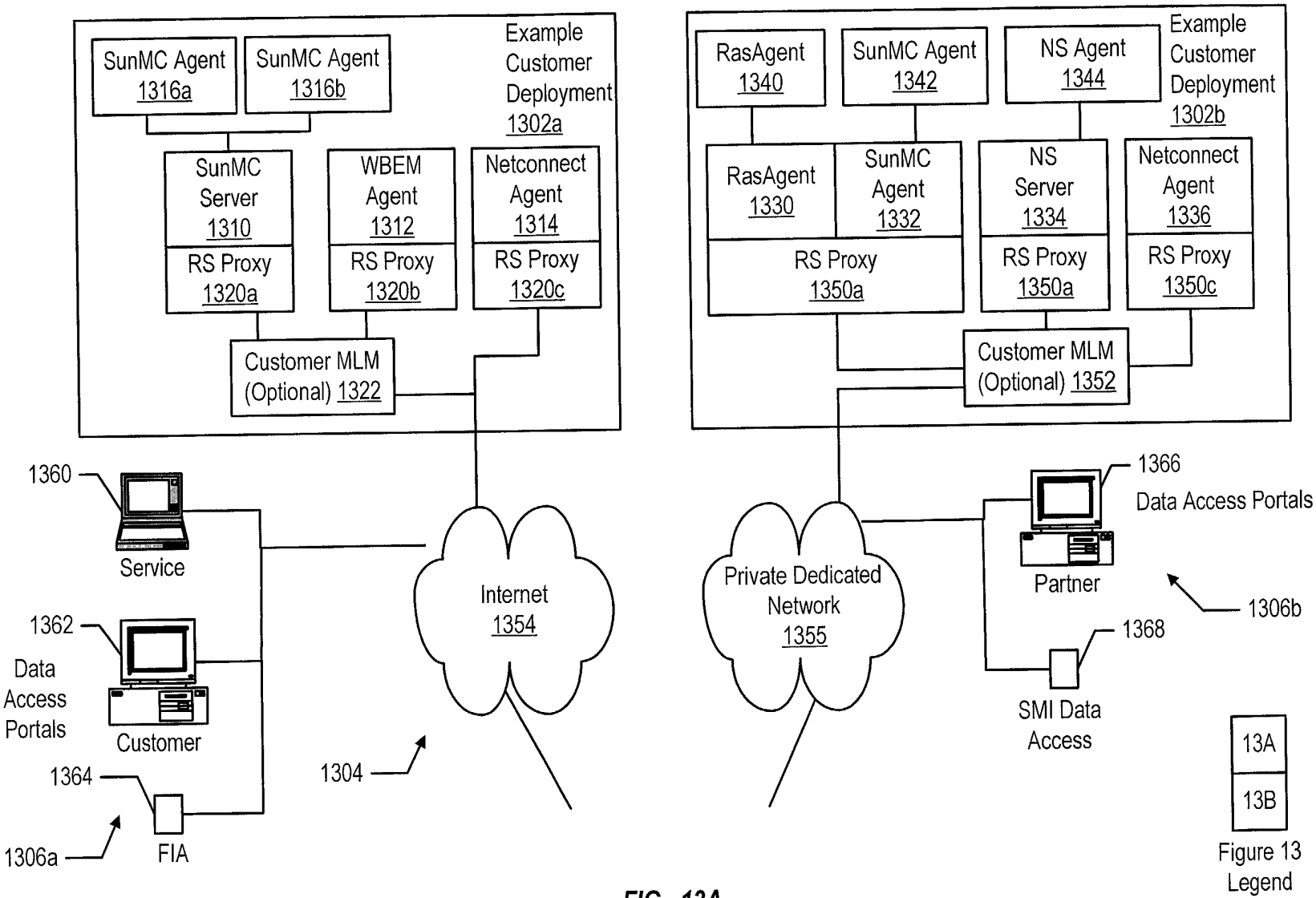

SunMC Agent 1316a
SunMC Agent 1316b
Example Customer Deployment 1302a
SunMC Server 1310
RS Proxy 1320a
WBEM Agent 1312
RS Proxy 1320b
Netconnect Agent 1314
RS Proxy 1320c
Customer MLM (Optional) 1322
RasAgent 1340
SunMC Agent 1342
NS Agent 1344
Example Customer Deployment 1302b
RasAgent 1330
SunMC Agent 1332
RS Proxy 1350a
NS Server 1334
RS Proxy 1350a
Netconnect Agent 1336
RS Proxy 1350c
Customer MLM (Optional) 1352
1360
Service
1362
Data Access Portals
Customer
1364
FIA
1306a
Internet 1354
1304
Private Dedicated Network 1355
1366
Data Access Portals
Partner
1306b
1368
SMI Data Access
13A
13B
Figure 13 Legend

FIG. 13A

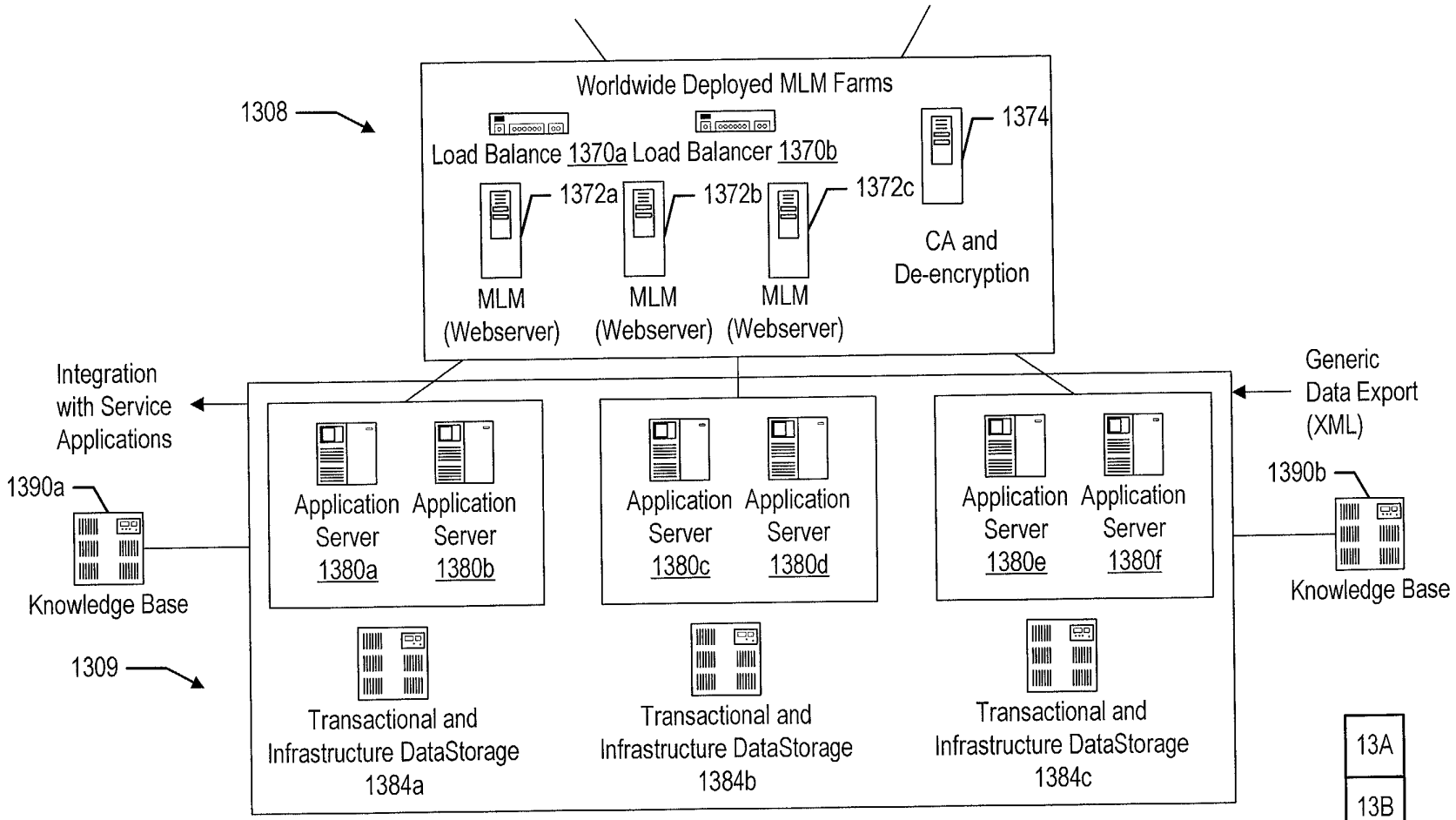

1308
Worldwide Deployed MLM Farms
Load Balance 1370a
Load Balancer 1370b
1374
1372a
1372b
1372c
CA and
De-encryption
MLM
(Webserver)
MLM
(Webserver)
MLM
(Webserver)
Integration
with Service
Applications
1390a
Knowledge Base
1309
Application
Server
1380a
Application
Server
1380b
Application
Server
1380c
Application
Server
1380d
Application
Server
1380e
Application
Server
1380f
Generic
Data Export
(XML)
1390b
Knowledge Base
Transactional and
Infrastructure DataStorage
1384a
Transactional and
Infrastructure DataStorage
1384b
Transactional and
Infrastructure DataStorage
1384c
13A
13B
Figure 13
Legend

FIG. 13B

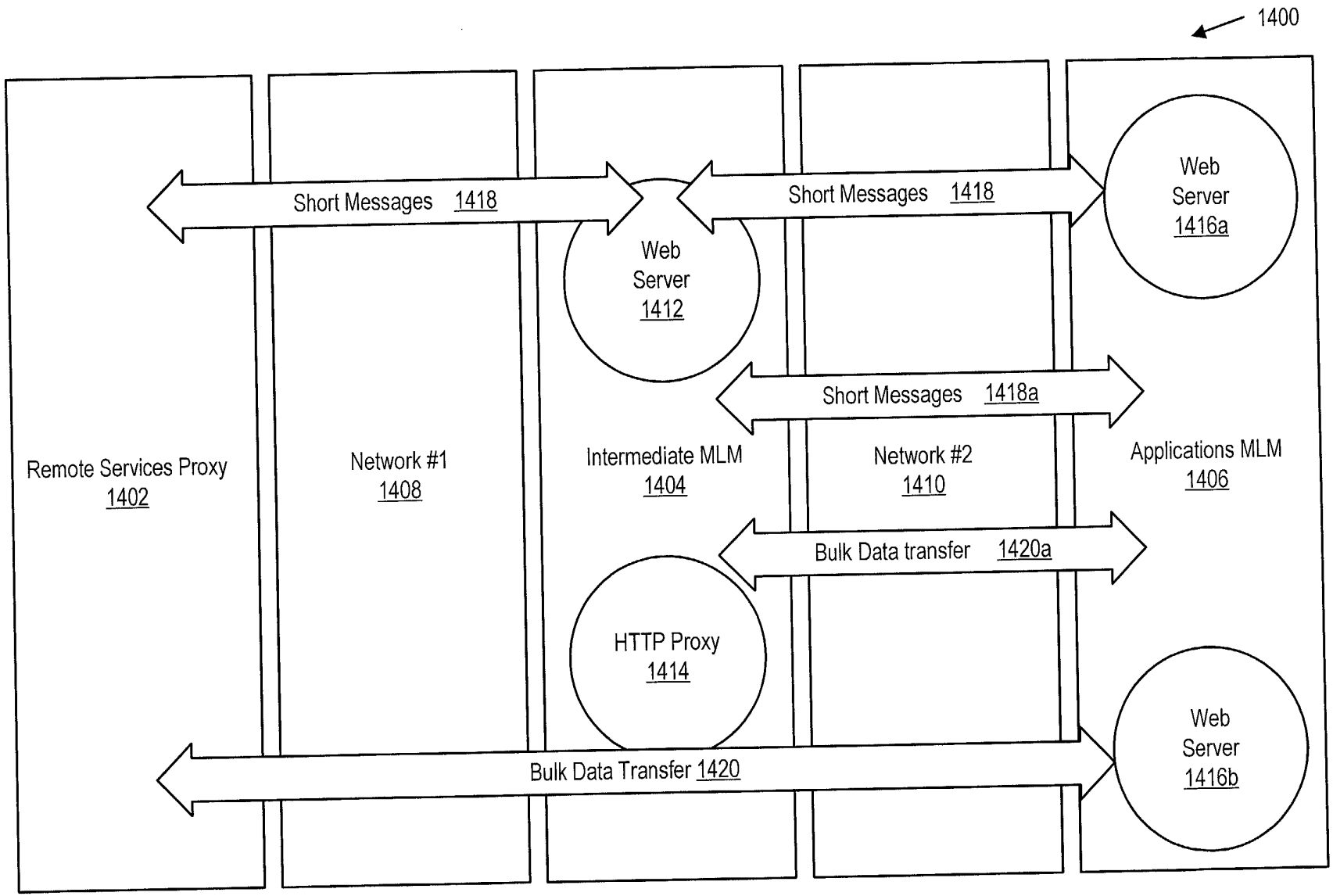

1400
Short Messages 1418
Short Messages 1418
Web Server 1416a
Web Server 1412
Short Messages 1418a
Remote Services Proxy 1402
Network #1 1408
Intermediate MLM 1404
Network #2 1410
Applications MLM 1406
Bulk Data transfer 1420a
HTTP Proxy 1414
Web Server 1416b
Bulk Data Transfer 1420

FIG. 14

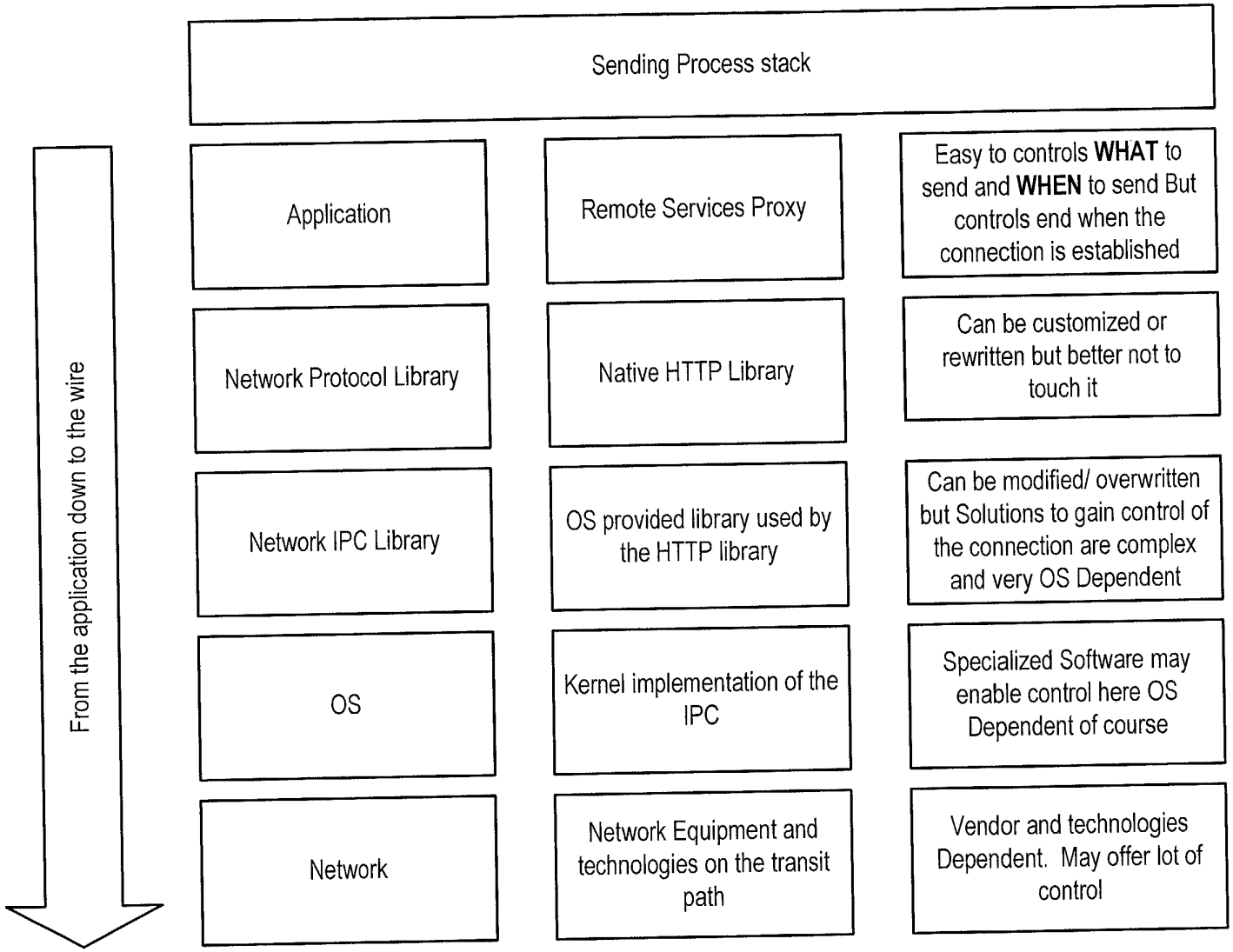

Sending Process stack
From the application down to the wire
Application
Remote Services Proxy
Easy to controls WHAT to send and WHEN to send But controls end when the connection is established
Network Protocol Library
Native HTTP Library
Can be customized or rewritten but better not to touch it
Network IPC Library
OS provided library used by the HTTP library
Can be modified/ overwritten but Solutions to gain control of the connection are complex and very OS Dependent
OS
Kernel implementation of the IPC
Specialized Software may enable control here OS Dependent of course
Network
Network Equipment and technologies on the transit path
Vendor and technologies Dependent. May offer lot of control

FIG. 15

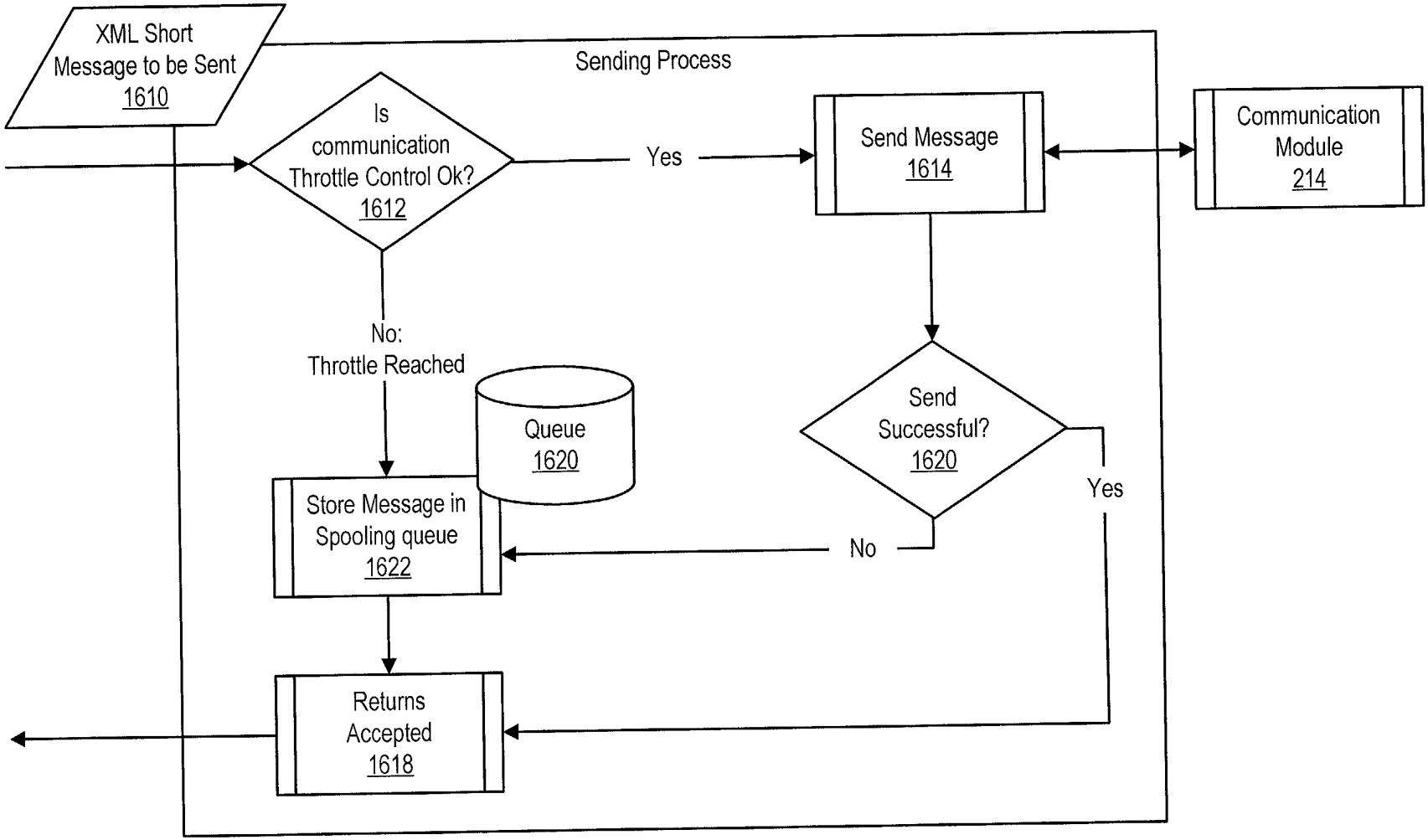

XML Short Message to be Sent 1610
Sending Process
Is communication Throttle Control Ok? 1612
Yes
Send Message 1614
Communication Module 214
No: Throttle Reached
Queue 1620
Send Successful? 1620
Yes
No
Store Message in Spooling queue 1622
Returns Accepted 1618

FIG. 16

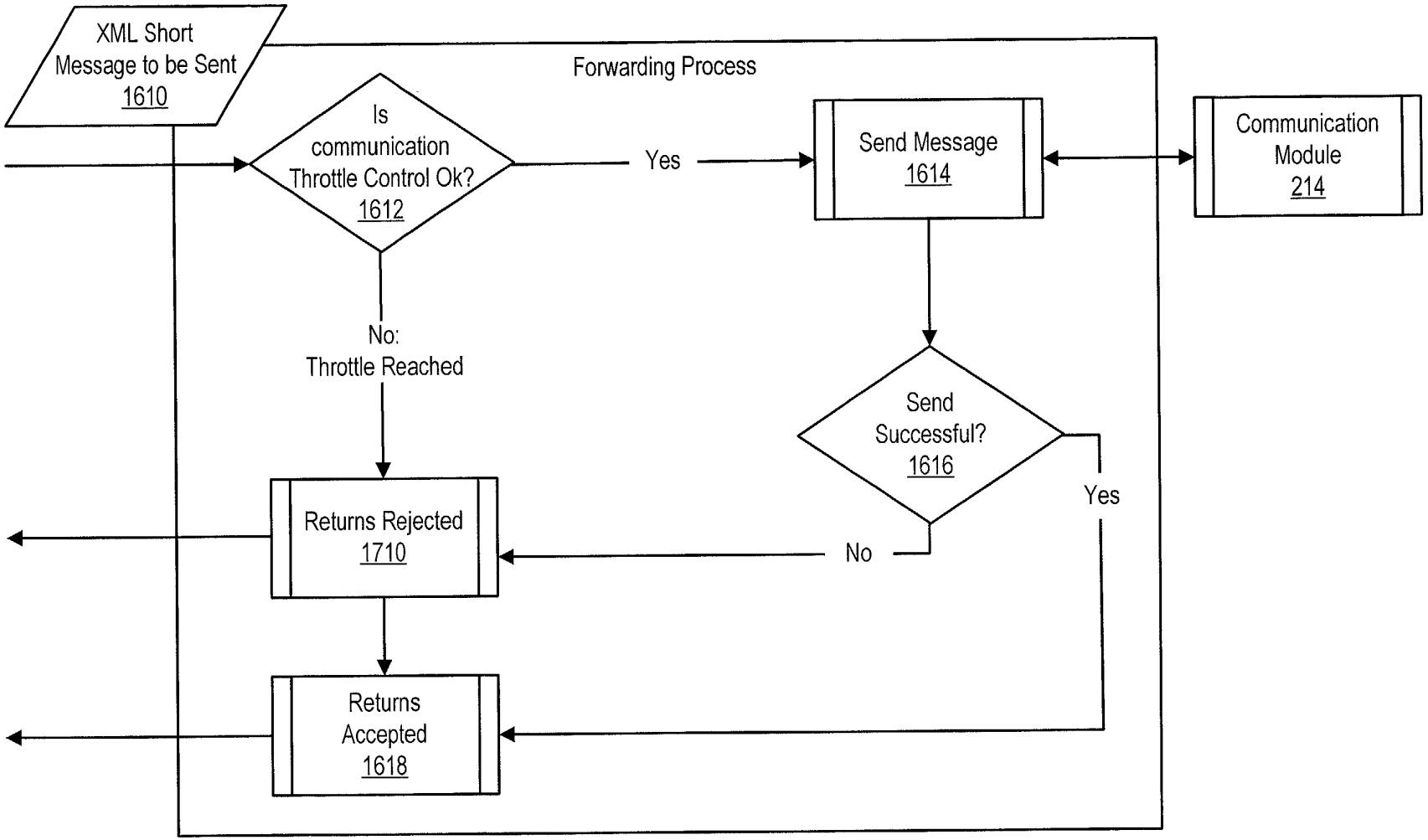

XML Short Message to be Sent 1610
Forwarding Process
Is communication Throttle Control Ok? 1612
Yes
Send Message 1614
Communication Module 214
No: Throttle Reached
Send Successful? 1616
Yes
No
Returns Rejected 1710
Returns Accepted 1618

FIG. 17

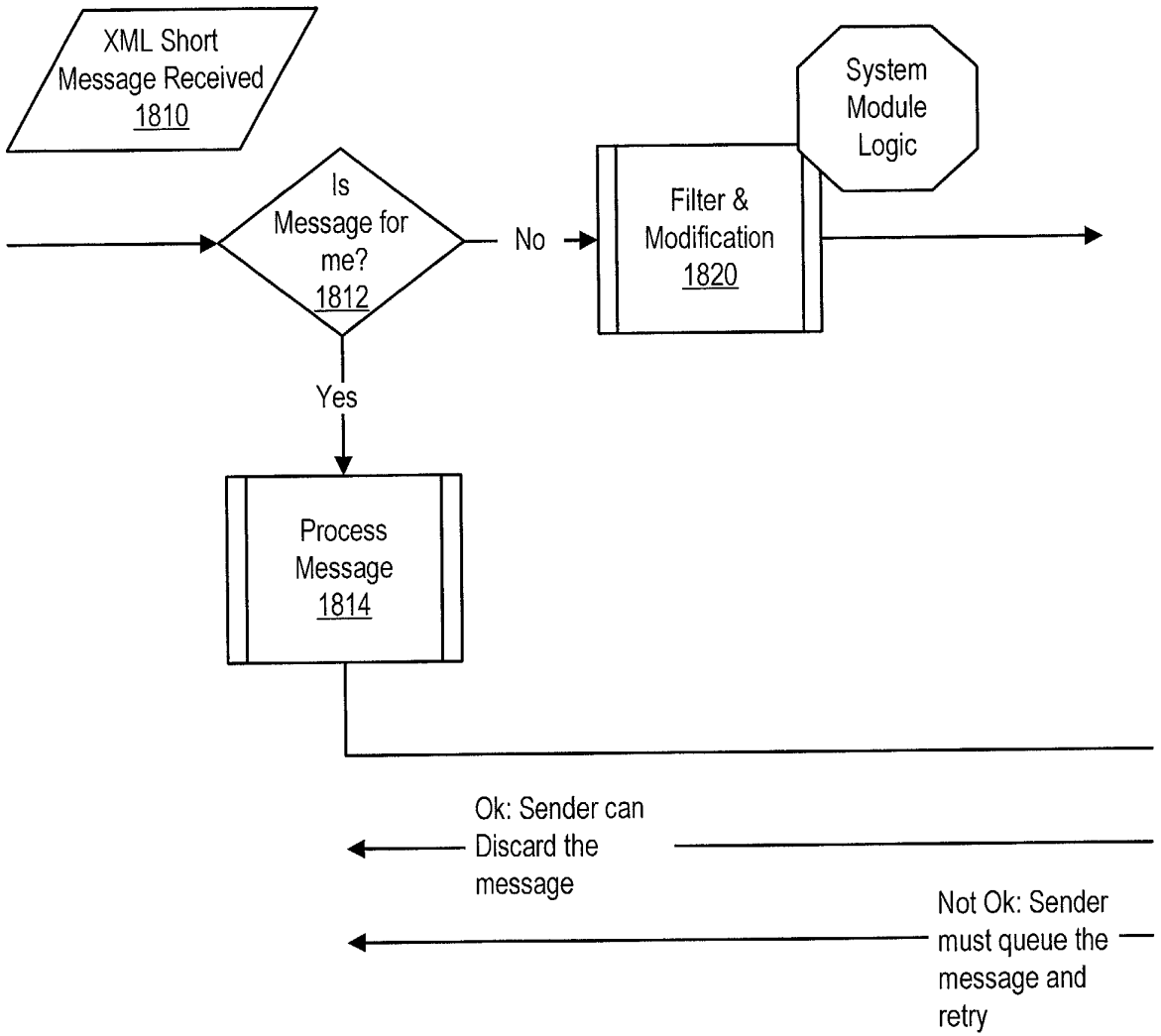


FIG. 18A

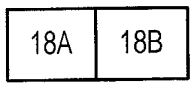
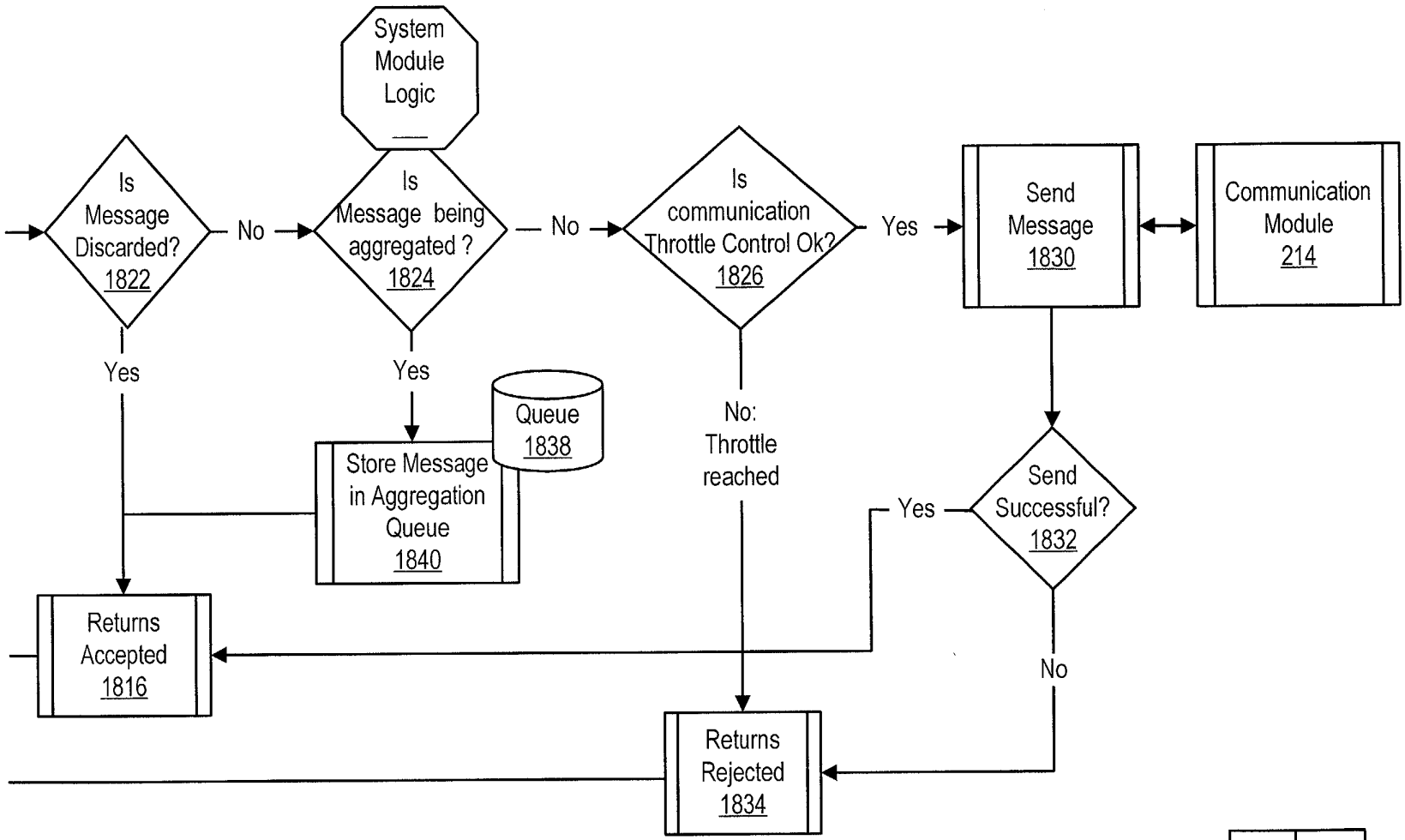


Figure 18 Legend



18A | 18B

Figure 18 Legend

FIG. 18B

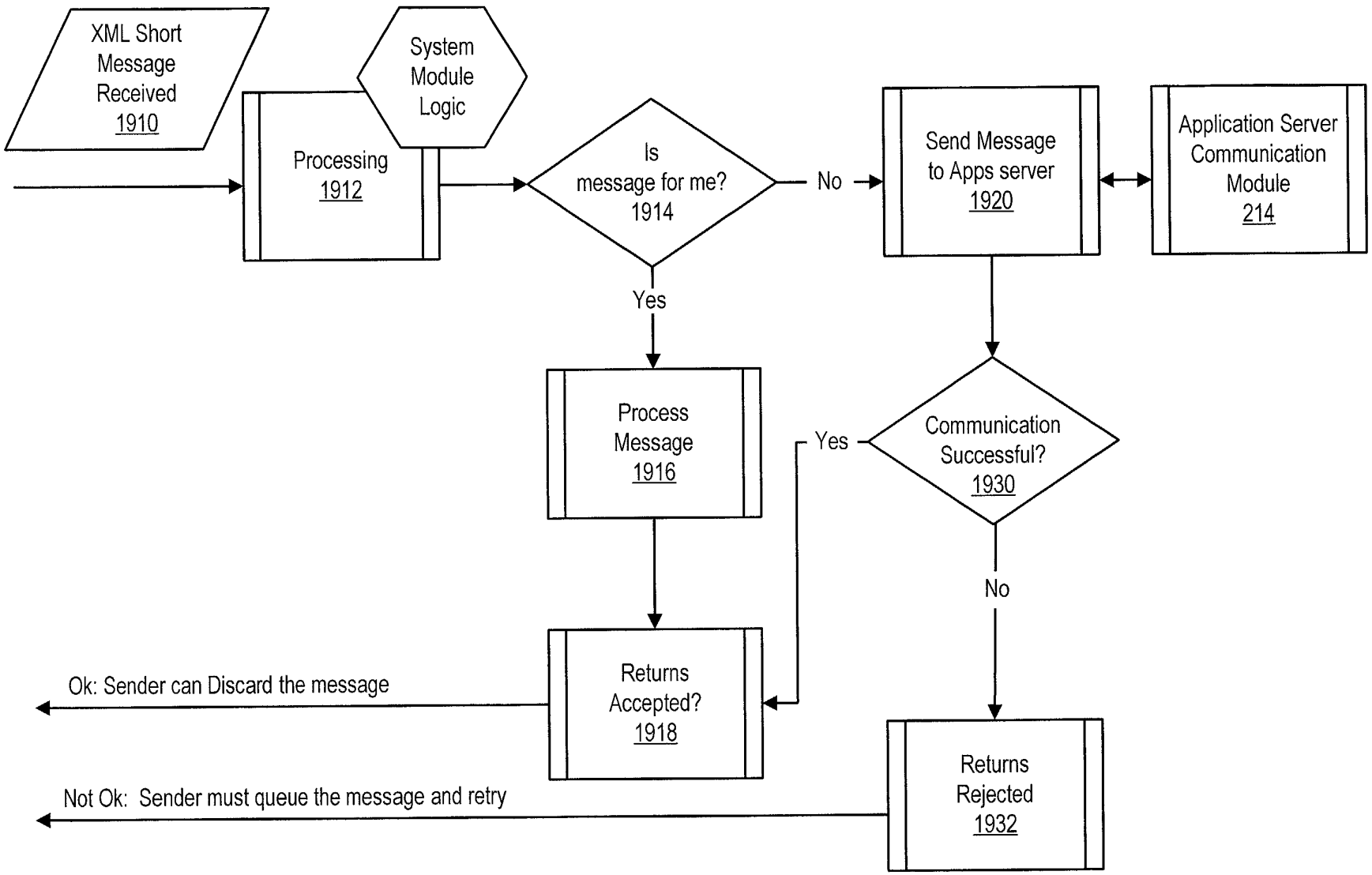

XML Short Message Received 1910
System Module Logic
Processing 1912
Is message for me? 1914
No
Send Message to Apps server 1920
Application Server Communication Module 214
Yes
Process Message 1916
Communication Successful? 1930
Yes
No
Returns Accepted? 1918
Ok: Sender can Discard the message
Returns Rejected 1932
Not Ok: Sender must queue the message and retry

FIG. 19

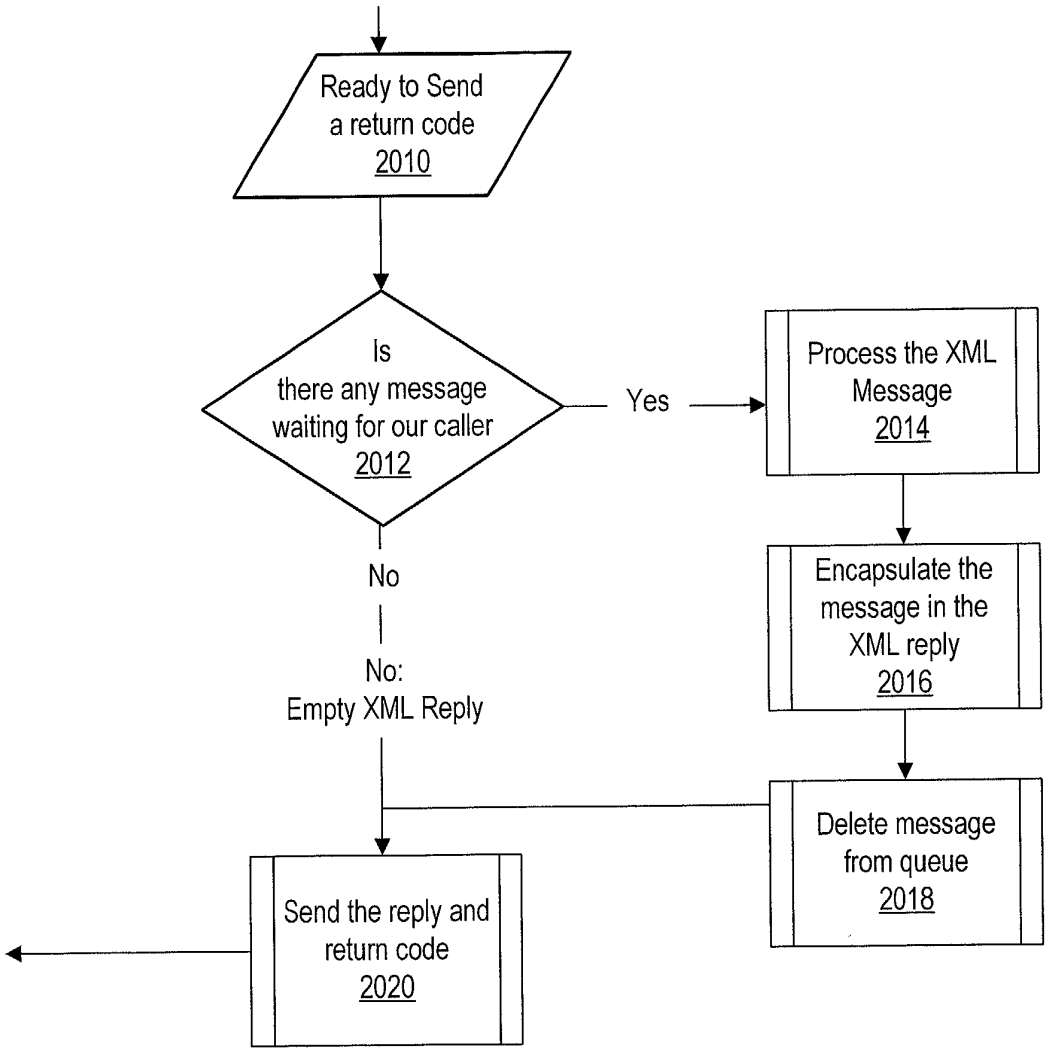

Ready to Send
a return code
2010
Is
there any message
waiting for our caller
2012
Yes
Process the XML
Message
2014
Encapsulate the
message in the
XML reply
2016
Delete message
from queue
2018
No
No:
Empty XML Reply
Send the reply and
return code
2020

FIG. 20

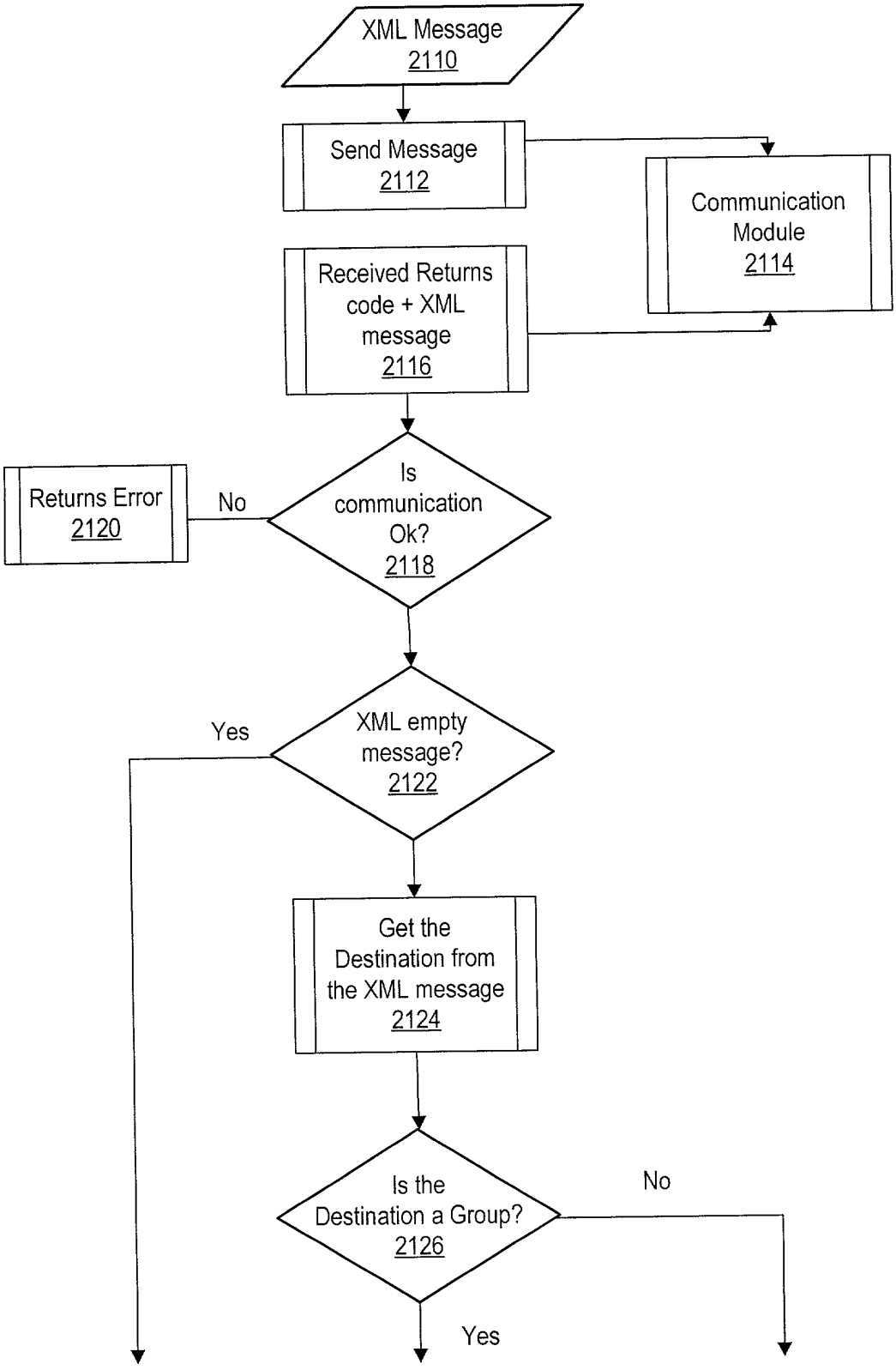

XML Message
2110
Send Message
2112
Communication Module
2114
Received Returns code + XML message
2116
Is communication Ok?
2118
No
Returns Error
2120
XML empty message?
2122
Yes
Get the Destination from the XML message
2124
Is the Destination a Group?
2126
No
Yes

FIG. 21A

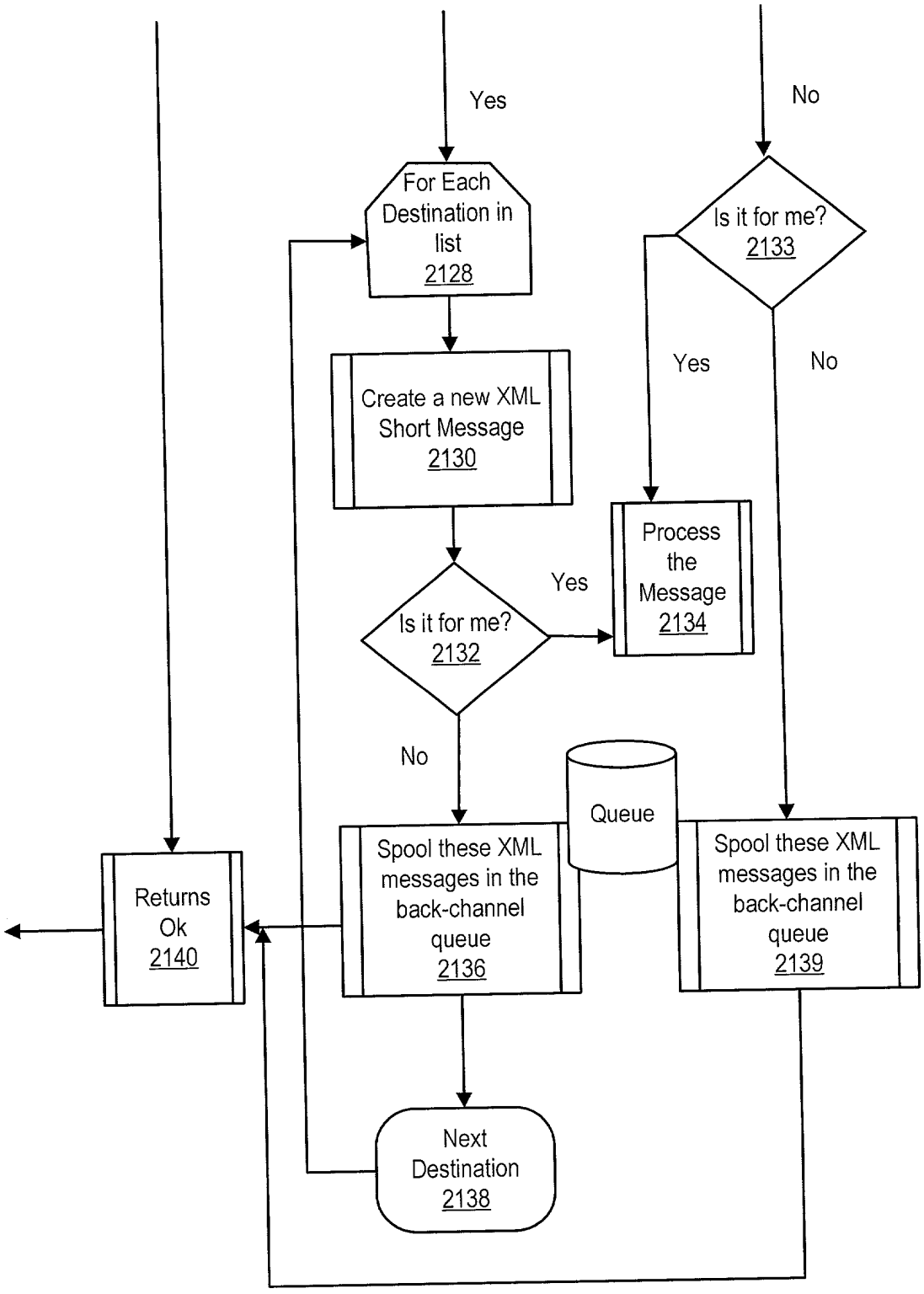

Yes
No
For Each Destination in list 2128
Is it for me? 2133
Yes
No
Create a new XML Short Message 2130
Process the Message 2134
Yes
Is it for me? 2132
No
Queue
Returns Ok 2140
Spool these XML messages in the back-channel queue 2136
Spool these XML messages in the back-channel queue 2139
Next Destination 2138

FIG. 21B

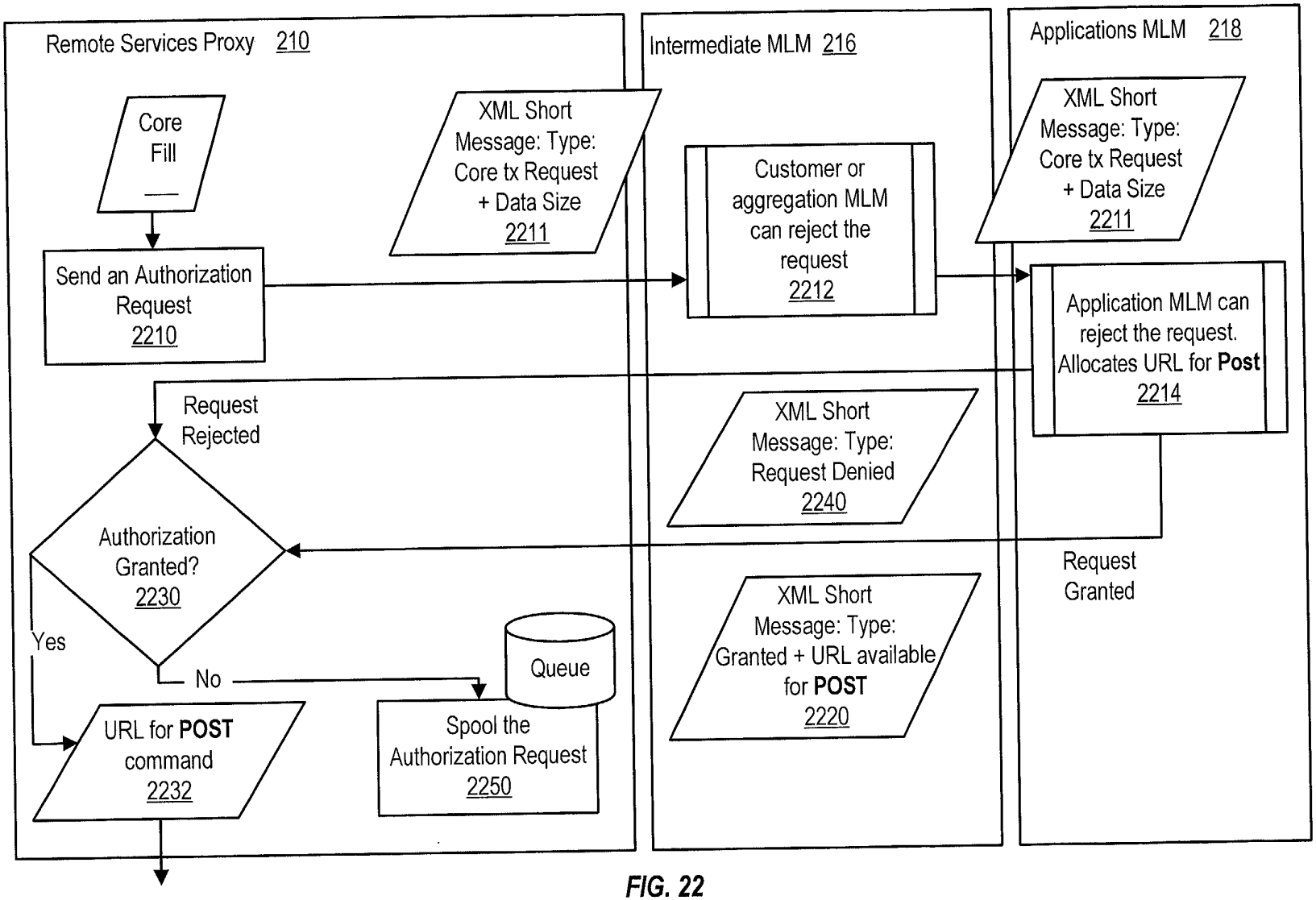

Remote Services Proxy 210
Intermediate MLM 216
Applications MLM 218
Core Fill
XML Short Message: Type: Core tx Request + Data Size 2211
Customer or aggregation MLM can reject the request 2212
XML Short Message: Type: Core tx Request + Data Size 2211
Send an Authorization Request 2210
Application MLM can reject the request. Allocates URL for Post 2214
Request Rejected
XML Short Message: Type: Request Denied 2240
Authorization Granted? 2230
Request Granted
XML Short Message: Type: Granted + URL available for POST 2220
Yes
No
Queue
URL for POST command 2232
Spool the Authorization Request 2250

FIG. 22

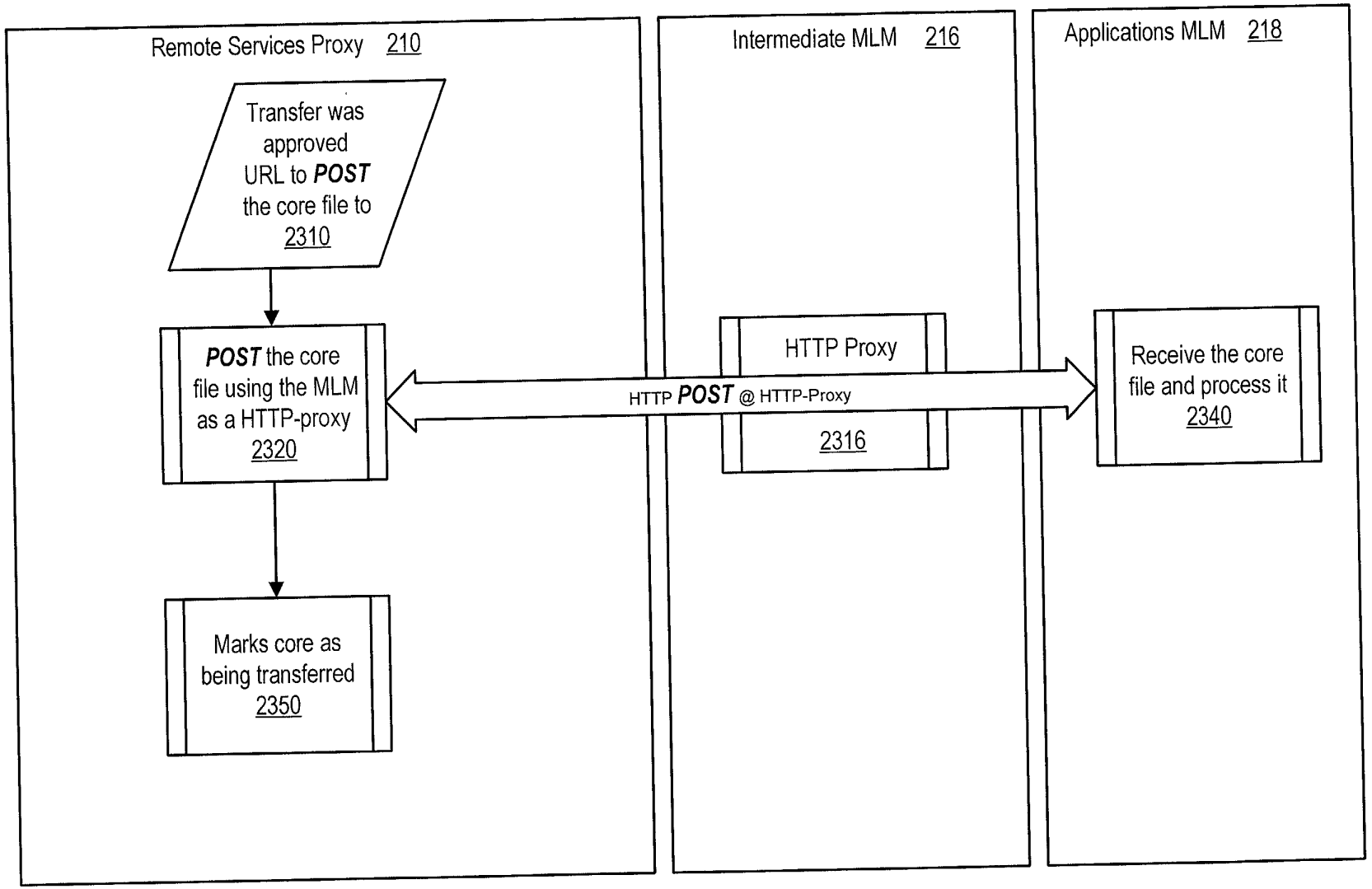

Remote Services Proxy 210
Transfer was approved URL to POST the core file to 2310
POST the core file using the MLM as a HTTP-proxy 2320
Marks core as being transferred 2350
Intermediate MLM 216
HTTP Proxy
2316
HTTP POST @ HTTP-Proxy
Applications MLM 218
Receive the core file and process it 2340

FIG. 23

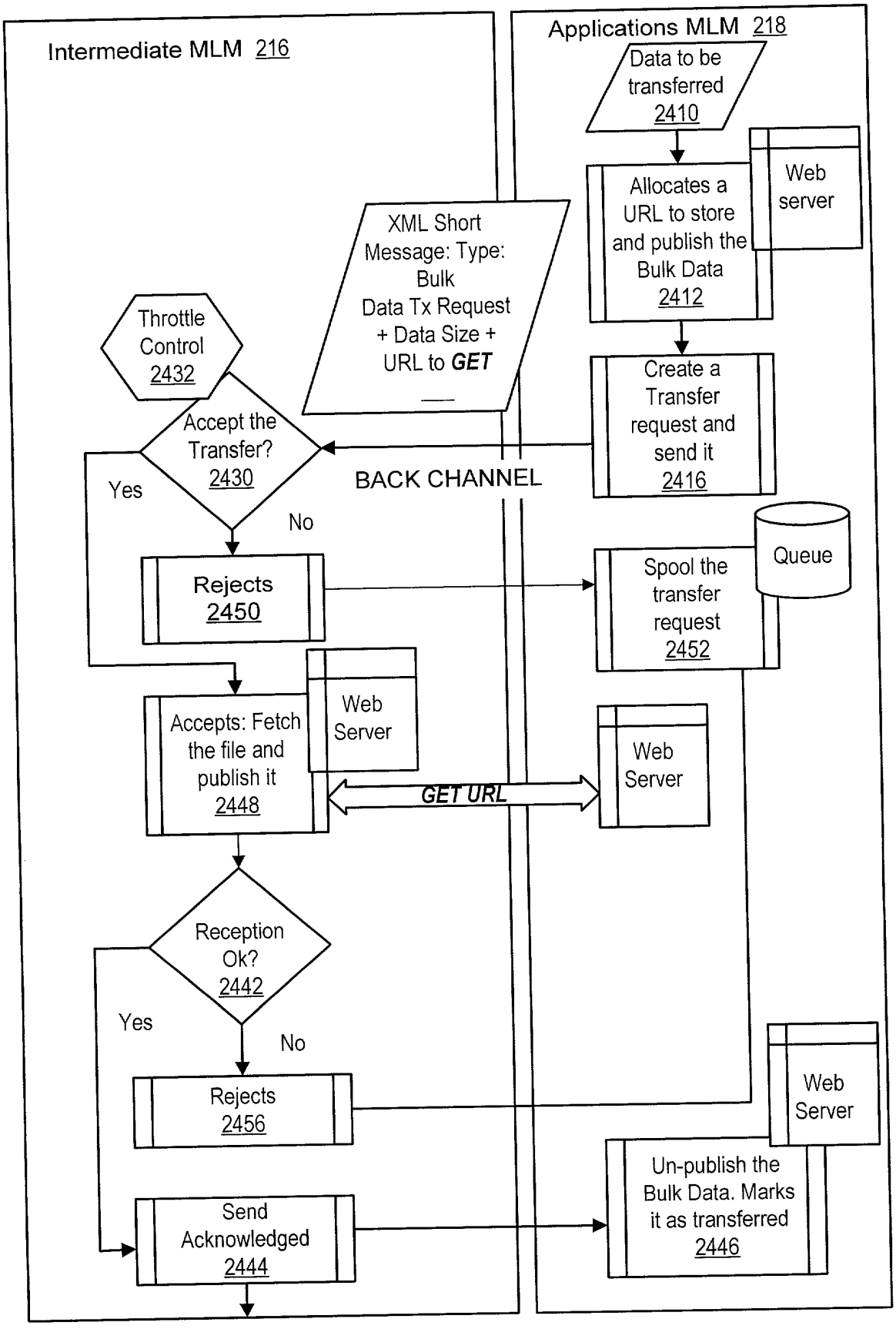

Intermediate MLM 216
Applications MLM 218
Data to be transferred 2410
Allocates a URL to store and publish the Bulk Data 2412
Web server
XML Short Message: Type: Bulk Data Tx Request + Data Size + URL to GET
Throttle Control 2432
Accept the Transfer? 2430
Yes
No
BACK CHANNEL
Create a Transfer request and send it 2416
Rejects 2450
Spool the transfer request 2452
Queue
Accepts: Fetch the file and publish it 2448
Web Server
GET URL
Web Server
Reception Ok? 2442
Yes
No
Rejects 2456
Web Server
Send Acknowledged 2444
Un-publish the Bulk Data. Marks it as transferred 2446

FIG. 24

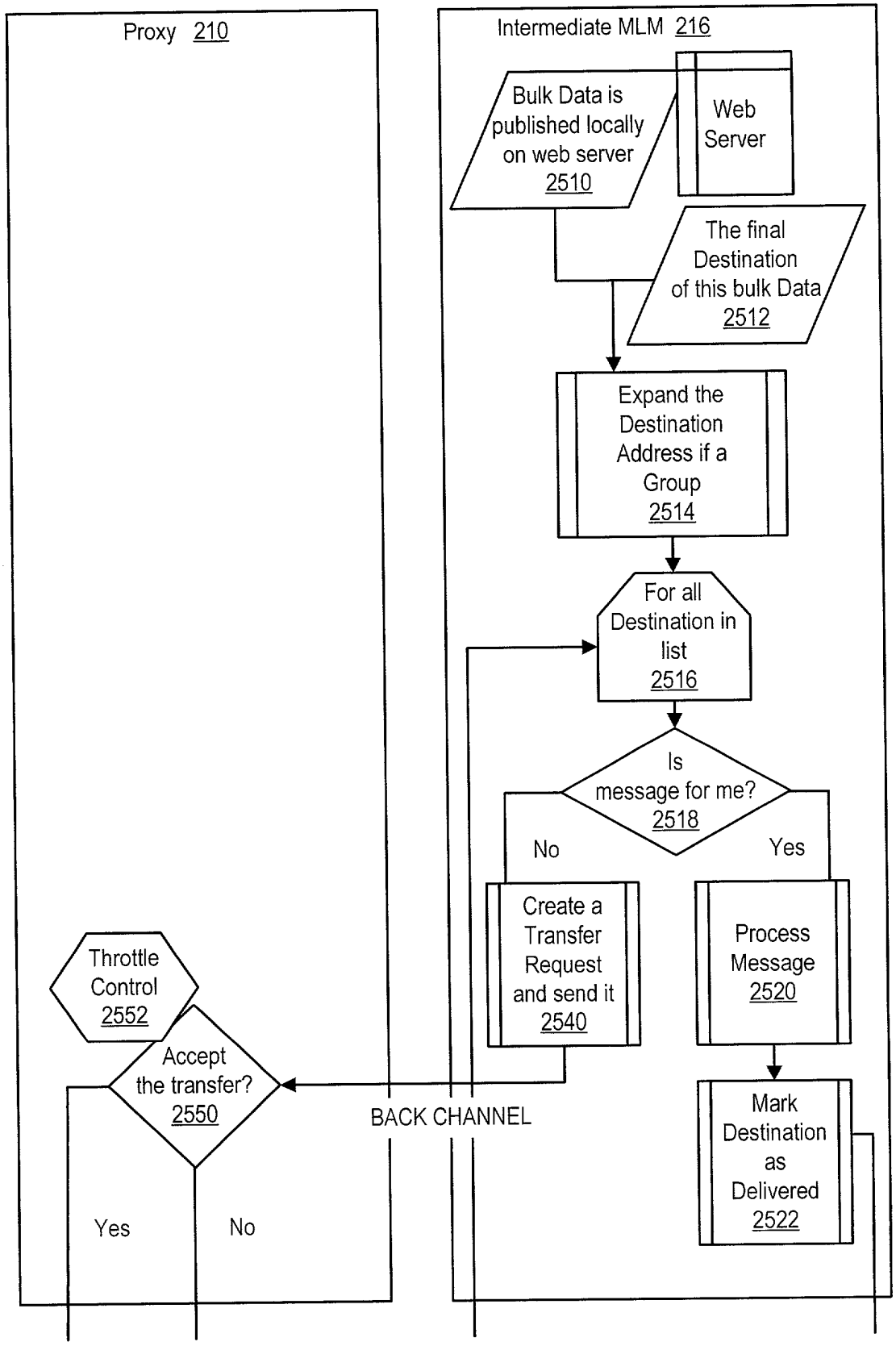

Proxy 210
Intermediate MLM 216
Bulk Data is published locally on web server 2510
Web Server
The final Destination of this bulk Data 2512
Expand the Destination Address if a Group 2514
For all Destination in list 2516
Is message for me? 2518
No
Yes
Create a Transfer Request and send it 2540
Process Message 2520
Mark Destination as Delivered 2522
Throttle Control 2552
Accept the transfer? 2550
Yes
No
BACK CHANNEL

FIG. 25A

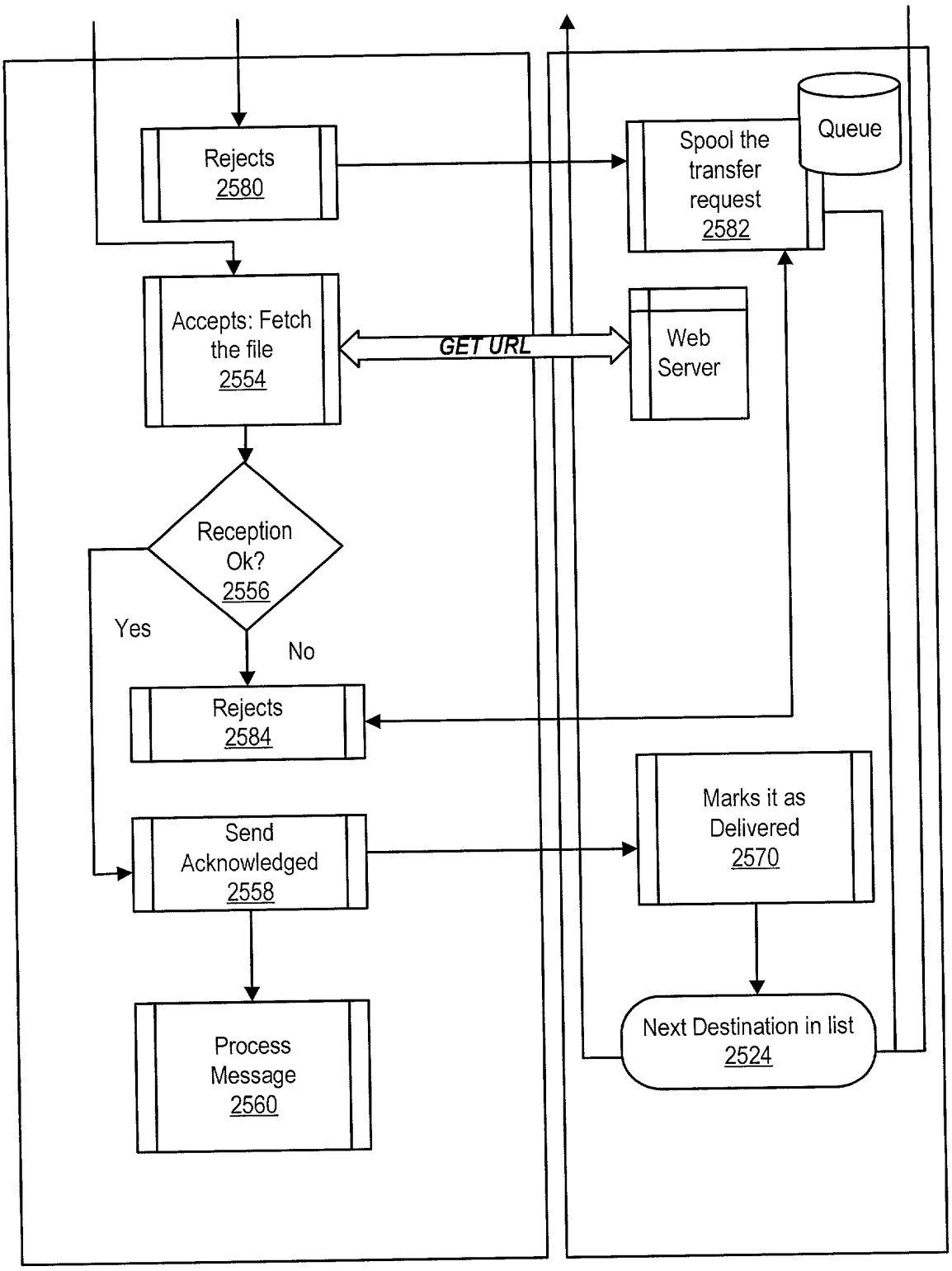

Rejects
2580
Spool the transfer request
2582
Queue
Accepts: Fetch the file
2554
GET URL
Web Server
Reception Ok?
2556
Yes
No
Rejects
2584
Marks it as Delivered
2570
Send Acknowledged
2558
Process Message
2560
Next Destination in list
2524

FIG. 25B

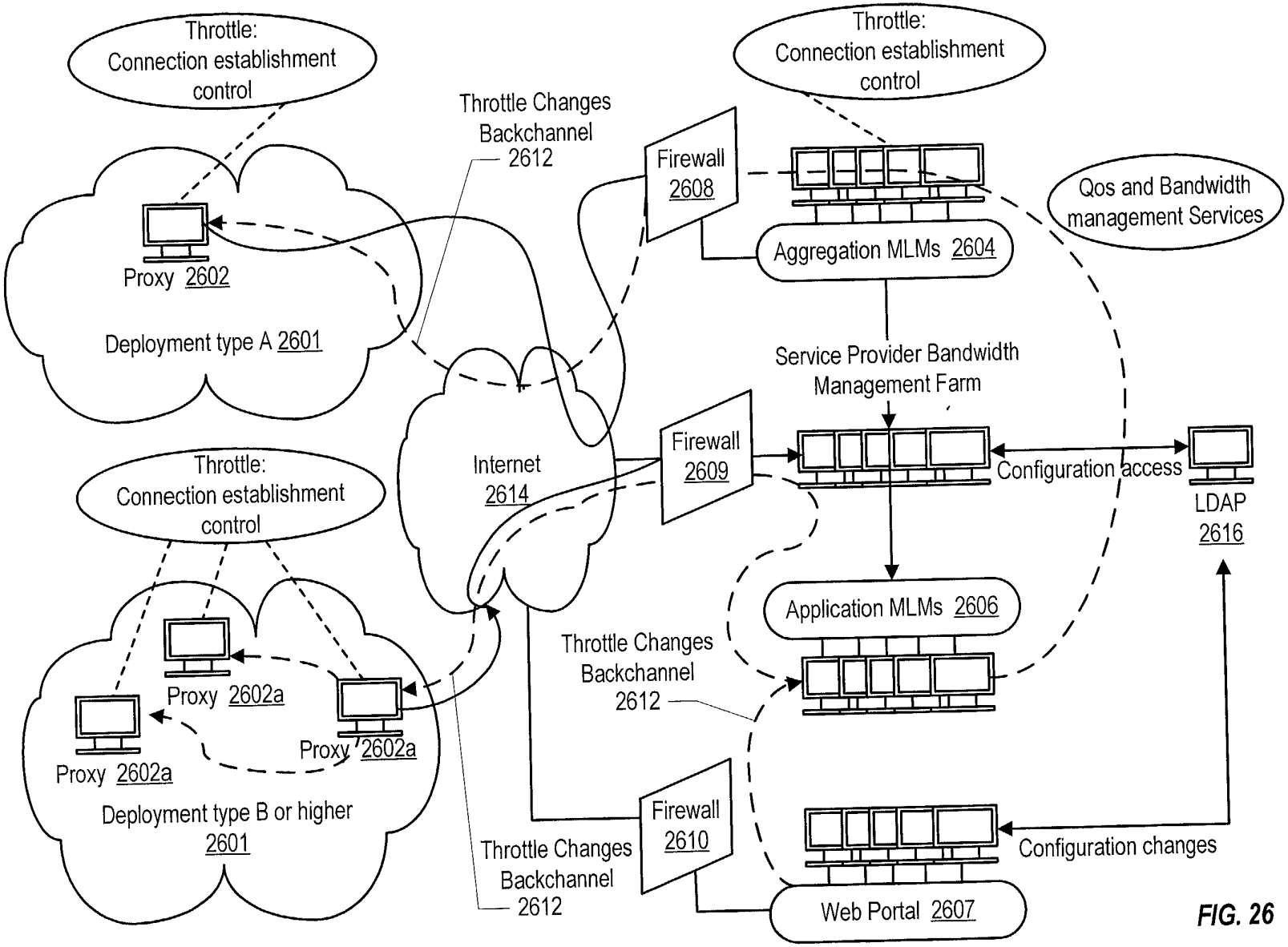

Throttle:
Connection establishment control
Throttle Changes Backchannel 2612
Firewall 2608
Throttle:
Connection establishment control
Qos and Bandwidth management Services
Proxy 2602
Aggregation MLMs 2604
Deployment type A 2601
Service Provider Bandwidth Management Farm
Internet 2614
Firewall 2609
Configuration access
LDAP 2616
Throttle:
Connection establishment control
Application MLMs 2606
Throttle Changes Backchannel 2612
Proxy 2602a
Proxy 2602a
Proxy 2602a
Deployment type B or higher 2601
Firewall 2610
Throttle Changes Backchannel 2612
Configuration changes
Web Portal 2607

FIG. 26